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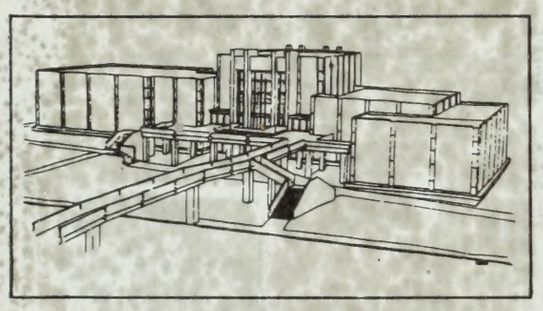

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OF THE

BUREAU OF ETHNOLOGY

TO THE

SECRETARY OF THE SMITHSONIAN INSTITUTION

1882-'83

BY

J. W. POWELL
DIRECTOR

WASHINGTON
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LETTER OF TRANSMITTAL.

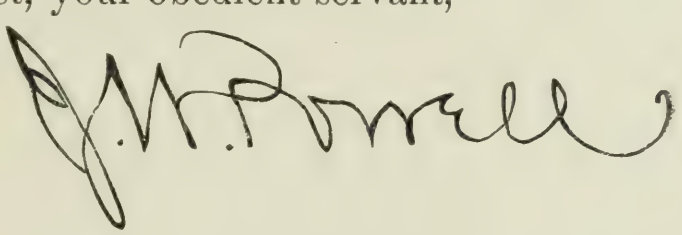
SMITHSONIAN INSTITUTION, BUREAU OF ETHNOLOGY,
Washington, D. C., October 25, 1883.

SIR: I have the honor to submit my Fourth Annual Report as Director of the Bureau of Ethnology.

The first part consists of an explanation of the plan and operations of the Bureau. The second part consists of a series of papers on anthropologic subjects, prepared by my assistants, to illustrate the methods and results of the work of the Bureau.

I desire to express my thanks for your earnest support and wise counsel relating to the work under my charge.

I am, with respect, your obedient servant,



Prof. SPENCER F. BAIRD,
Secretary Smithsonian Institution.

FOURTH ANNUAL REPORT

OF THE

BUREAU OF ETHNOLOGY.

By J. W. Powell, Director.

INTRODUCTORY.

The prosecution of ethnological researches among the North American Indians, as directed by act of Congress, was continued during the fiscal year 1882–'83.

The plan has been pursued, as explained in previous reports, of employing scholars trained in the special researches contemplated to conduct the necessary investigations and present results for publication. In the following pages will be found an account of the particular character of the work of each person engaged therein, though it should be noted that all of these are, at times, diverted from the special works mentioned to combine their exertions for purposes regarded as of immediate general importance. Some of the lines of study require both prolonged compilation and exhaustive discussion, and delays occur by ascertained necessity for renewed research on points of difficulty. Hence some of the work reported, especially in the linguistic division and in that of ethnic classification inseparably connected with it, though nearly completed, and in some instances advanced to the extent of stereotyping, remains unpublished.

The attempt to stimulate and guide research on the part of collaborators not officially connected with the Bureau has also been continued Results of value have been obtained through

special applications to individuals and through interest excited by the publications thus far made. It is hoped that additional impulse may be given to the researches of this class of persons by the timely publication of bulletins setting forth the discoveries and contributions of the various scholars who thus co-operate with the Bureau.

In order to set forth satisfactorily the operations of the Bureau somewhat in detail, the subject will be divided into three principal parts, the first relating to the publication made by the Bureau, the second to the work prosecuted in the field, and the third to the office work, being to a large extent the preparation for publication of the results of field work, with the corrections and additions obtained from the literature of the subject and by correspondence.

PUBLICATIONS.

During the early part of the year the First Annual Report was issued and distributed. It was a royal octavo volume of 638 pages, besides 56 full page plates, the whole number of illustrations being 346. The papers accompanying the official statement of the Director were as follows:

On the evolution of language, by J. W. Powell.
Sketch of the Mythology of the North American Indians, by J. W. Powell.
Wyandot Government, by J. W. Powell.
On limitations to the use of some anthropologic data, by J. W. Powell.
A further contribution to the study of the mortuary customs of the North American Indians, by H. C. Yarrow.
Studies in Central American picture-writing, by E. S. Holden.
Cessions of land by Indian tribes to the United States, by C. C. Royce.
Sign language among North American Indians, by Garrick Mallery.
Catalogue of linguistic manuscripts in the library of the Bureau of Ethnology, by J. C. Pilling.
Illustration of the method of recording Indian languages, from the manuscripts of Messrs. J. O. Dorsey, A. S. Gatschet, and S. R. Riggs.

Of the Second Annual Report 465 pages, comprising the whole volume except the official introduction by the Director and the index, were stereotyped during the year.

Pages 493–571 of the English-Klamath part of the dictionary of the Klamath language, by Mr. A. S. Gatschet, to form, when completed, Vol. II of the series of Contributions to North American Ethnology, were stereotyped.

Pages 480–665 of the Dakota Dictionary, by Rev. S. R. Riggs, edited by Rev. J. Owen Dorsey, were stereotyped, completing the Dakota-English portion of the work, which will form part of Vol. VII of the last mentioned series.

Pages 97–512 of Mr. J. C. Pilling's Bibliography of the Languages of the North American Indians were also placed in type.

FIELD WORK.

This includes, first, explorations with reference to material objects produced by the native tribes; and, second, examination of the members of those tribes, both as individuals and as aggregations. These divisions are related, but the first chiefly concerns archæology and technology, and the second philology, mythology, and sociology. It is manifest that without the authority and assistance of the Government little useful work can be done in the first of these divisions. The object of private explorers in this direction is usually to procure relics or specimens for sale or merely to gratify curiosity, with the result that these are often scattered and lost for any comprehensive study, while their receptacles, whether mounds, graves, or ruins, are in many cases destroyed without intelligent examination or record The trained explorers of the Bureau preserve all useful facts touching the localities concerned, and the objects collected, both ancient and modern, are deposited in the National Museum. Experience has also shown that individual travelers, unguided and without common system, have failed to obtain the best results in the second of the above mentioned divisions. The precious accounts of early explorers cannot be understood without the interpretation and corrections still, though for a limited time, to be gained from among existing tribes.

MOUND EXPLORATIONS.

WORK OF PROF. CYRUS THOMAS.

The Bureau of Ethnology was first organized on the basis of work developed by the Director while in charge of explorations and surveys in the valley of the Colorado River of the West.

It therefore did not embrace any plan for archæologic investigations in the eastern portion of the United States, and in particular did not contemplate researches relating to the mounds; but Congress having directed that such work should be added to the functions of the Bureau, a limited amount of work was accomplished in this field during the past year. The experience thus gained showed that a more thorough systematization of the work was necessary. Early in the year, therefore, a Division of Mound Explorations was organized, for a comprehensive examination of mounds and other ancient works in the United States east of the Rocky Mountains, and Prof. Cyrus Thomas, of Illinois, was appointed an assistant in the Bureau in charge of the division. It is proposed to make a thorough investigation of the mounds and other works connected therewith, in their structure, contents, and geographic distribution, with a view to determining the purposes for which they were used, the grade of culture of their authors, and the relations existing between the builders and the tribes inhabiting the country on the advent of European civilization to this continent.

From examinations made by the Director, years before the inauguration of this work, it was apparent to him that a few, at least, of the important mounds of the valley of the Mississippi, had been constructed and used subsequent to the occupation of this continent by Europeans, and that some, at least, of the mound builders were therefore none other than known Indian tribes.

For the purpose of carrying on the work, Professor Thomas was authorized to employ such field assistants as the means allotted to this purpose would justify. The regular assistants employed during the year were Dr. Edward Palmer, who had been engaged for a number of years in this department of work, Mr. P. W. Norris, and Mr. James D. Middleton. Besides these, Mr. L. H. Thing, Mr. John P. Rogan, Mr. F. S. Earle, Mr. William McAdams, and Mr. John W. Emmert were engaged for shorter periods as temporary assistants.

Dr. Palmer's field of operations was confined chiefly to West Tennessee and Arkansas, though he devoted a short time on

his way out to an examination of the mounds along the Wabash.

Mr. Norris devoted his time chiefly to an exploration of the mounds along both banks of the Mississippi River from Northern Iowa to the mouth of the Arkansas.

Mr. Middleton was engaged during the first part of the fiscal year in opening mounds in Southern Illinois, after which his field of labor was in East Tennessee and the adjacent portions of Georgia and Alabama.

During the time Mr. Thing was employed his work was confined to Southern Illinois and Southeast Missouri.

Mr. McAdams was employed but a short time to make a survey and examination of the mound groups in Madison County, Illinois.

Mr. Rogan was engaged, near the close of the year, to explore certain mounds in Caldwell County, North Carolina, which had been reported by Dr. J. M. Spainhour, of Lenoir, in that State, who also rendered great aid in this work, which proved very successful and probably the most interesting of the year. During the time Mr. Emmert was employed, he was engaged in opening mounds and graves in East Tennessee and in investigating the manufacture of fraudulent Indian soapstone relics in Western North Carolina.

Mr. Earle was also employed to examine the localities and the character of the various ancient works in Southeast Missouri and to prepare descriptions of them. This he did in a satisfactory manner.

Previous to the organization of the division, Professor Thomas made some explorations in person in Southern Illinois and Southeast Missouri. From the survey made by him at this time a model of some remarkable works in Jackson County, Illinois, was prepared under his direction for the National Museum.

The number of specimens obtained and placed in the National Museum, as shown by the preliminary catalogue, amounts to over four thousand one hundred. These embrace almost every type of article hitherto found in mounds, as well as a

number of instructive specimens found in Indian graves on the sites of old Indian villages and elsewhere.

The collection of pottery is large, embracing several hundred complete specimens, presenting almost every type, both as to form and as to ornamentation, heretofore discovered in the earthworks, also a few unique in form and decoration.

The craniological collection contains a number of perfect specimens. It is especially valuable because of the full record kept regarding locality and all the particulars relating to each specimen.

The collection of articles of stone includes, besides arrow and spear points, scrapers, hoes, diggers, chipped celts, discoidal and chunkee stones, grooved axes, pitted stones, hammer and pounding stones, a remarkably fine series of polished celts, a large number of steatite pipes, three remarkable winged pipes of green chlorite slate of the finest workmanship, two large image pipes, gorgets, plummets, and boat-shaped ornaments.

A number of shell and bone ornaments were obtained, also some of the finest engraved shells so far discovered, and several copper implements and ornaments.

Among the articles obtained indicating contact with European civilization are some specimens of hammered iron from a North Carolina mound; some bracelets, brooches, crosses, and other objects of silver from a Wisconsin mound; fragments of copper plate bearing the impress of machinery on a metallic stamp from an Illinois mound, and a hog's tooth from an Arkansas mound.

The value of this collection is enhanced by the care taken to have the specimens properly labeled and numbered from the time they were found in the field until they received the Museum catalogue number and by preparing a corresponding catalogue giving the locality where each specimen was obtained, the name of the collector, and the environment of specimen found—for example, whether in a mound, in a grave, or on the surface—which catalogue has been filed in the National Museum as a means of future reference and verification.

A large number of mound groups and other ancient works

have been found and mapped, and a considerable collection of drawings, photographs, and sketches has been made of the more important.

The result of the year's work has been of much value in the solution of vexed questions relating to the "Mound Builders," so styled, a special report on which is in preparation.

ARCHÆOLOGIC CARTOGRAPHY.

Scheme of Conventions for the Archæologic Cartography of North America.

- Indian village.
- Wood lodge.
- Group or village of wood lodges.
- Earth lodge.
- Group or village of earth lodges.
- Stone lodge.
- Group or village of stone lodges.
- Cliff lodge.
- Group or village of cliff lodges.
- Cavate lodge.
- Group or village of cavate lodges
- Subterranean lodge.
- Group or village of subterranean lodges.
- Igloo lodge.
- Group or village of igloo lodges.
- Inhabited stone village (pueblo).
- Assembly lodge of wood.
- Assembly lodge of earth.
- Assembly lodge of stone.
- Cliff assembly lodge.
- Cave assembly lodge.
- Subterranean assembly lodge.
- Tower.
- Mound.
- Group of mounds.
- Assembly mound.
- Effigy mound.
- Group of effigy mounds.
- Domiciliary mound.
- Burial mound.
- Mound with single stone grave.
- Mound with stone graves.
- Grave or single burial.
- Cemetery,
- Stone grave.
- Stone-grave cemetery.
- Ossuary.
- Inclosure.
- Inclosure with interior mound.
- Inclosure with exterior mound.
- Excavation.
- Reservoir.
- Canal.
- Copper mine.
- Flint-mine or quarry.
- Soapstone mine.
- Mica mine.
- Cave deposit.
- Cave burial.
- Refuse heap.
- Shell heap.
- Sculpture.
- Group of sculptures.
- Petroglyph.
- Group of petroglyphs.
- Cache.
- Cairn.
- ---- Trail.

The geographic distribution of archæologic phenomena being of great importance, and the statute having provided

for general archæologic research in the United States, it was thought best by the Director to prepare a system of symbols to be used in the cartography of the subject. In the preparation of such a scheme, the symbols used in Europe were examined, for the purpose of adopting the same where possible; but, on careful study of the subject, it was found that the phenomena of the two continents differ so widely that no European scheme could be utilized in North America. A new scheme was therefore prepared, adapted to North America, and especially the United States, as above presented.

It is believed that this scheme requires no general discussion for its explanation. The mnemonic system embraced therein is perhaps sufficiently obvious.

As the work of investigation extends southward through Mexico and Central America, it may be found necessary to add somewhat to the above plan.

EXPLORATIONS IN THE SOUTHWEST.

WORK OF MR. JAMES STEVENSON.

Mr. James Stevenson, with the party committed to his charge, started from Fort Wingate, N. Mex., early in August, 1882, with instructions to direct his work to an exploration and study of that class of ancient remains in Arizona and New Mexico commonly known as "cave and cliff dwellings."

The field of his first investigations was the Cañon de Chelly, a branch of the San Juan Valley in Northeastern Arizona. He noted carefully the various ruins he successively met, while those of a more remarkable character which were accessible were thoroughly examined, photographed, and described.

Among these was the extensive ruin discovered by General Simpson in 1848 and called by him "Casa Blanca." Of this, the photographer of the party secured an excellent negative, and an accurate survey was made for the purpose of preparing a model.

The party was unable to explore more than one of the branches of this cañon, but in this a remarkable and well preserved village was found which probably once was the home

of between a thousand and fifteen hundred persons. The extremes of the habitable floor were 1,500 feet apart, while from the rear wall of the cave to the edge of the precipice was about half that distance. The floor of the two wider portions of the cave was thickly studded with dwellings, built of square stones laid in mortar, all of which were in ruins. An edifice of grander proportions, three stories in height, and almost as well preserved as in the day of its occupation, nearly filled up the narrow space in front of a dividing rock projection. It stood 300 feet from the bed of the cañon, and was accessible only at one point, where an accumulation of rocky débris formed a steep sloping ascent. Many distinctive architectural features were noted. All the materials out of which the structure was built had been worked by stone implements, as was evidenced by the rough chiseling of the blocks. Cross pieces were laid upon the joists for the flooring of the towers, and upon these pieces twigs about the diameter of a man's finger were arranged side by side, but in series which formed a peculiar mosaic of angles and squares.

In each division of the cave was found one circular structure, which probably was a place of assemblage for religious rites or amusement. Structures of this kind are common in that section of the country, but these were different, in many respects, from any before examined by the members of the party, and especially different in their interior ornamentation, which was quite elaborate. In one of them a wide band was laid on in bright durable colors, resembling a Greek fret, with narrower bands above and below, and with the interior spaces filled with curious artistic designs, the meaning of which is unknown. The roofs of the building were gone and the floors were covered with rocky débris. Good photographs of this village were obtained and a survey was completed for the preparation of a model.

Among the débris of the declivity two skeletons were found buried in a pentagonally-shaped cyst. They were in a sitting posture, having the knees drawn upward toward the chin and the hands crossed on the breast. The bodies were wrapped in coarse nets made of some vegetable fibre, and, with the

exception of a few grains of Indian corn, the grave was empty. Hair of a brownish hue was found still clinging to one of the skulls, while the shriveled flesh and skin, as hard as stone, remained upon some of the lower limbs. From the discovery of these skeletons Mr. Stevenson gave to this branch the name of Cañon de los Muertos.

Another village in this cañon of equal extent and similarly situated, though in a more advanced stage of ruin, was visited and some interesting discoveries were made. Among the débris of the fallen buildings were found finely woven sandals, resembling nothing with which the present occupants of this region are familiar; also, portions of matting and of garments made from the fiber of yucca. Evidences of great antiquity of some of these ruins are mixed with indications of later occupancy in a manner most confusing to the archæologist.

The party traveled fifteen miles in the Cañon de los Muertos and discovered seventeen villages or clusters of dwellings, some of which were situated five hundred feet from the bed of the cañon. The entire number of cliff villages visited by the party was forty-six.

The whole of November was devoted to an examination of cave dwellings. Remarkable illustrations of this class were found about fifteen miles north of the pueblo of Cochiti, N. Mex. These were situated in a cañon called by the Mexicans "Rito de los Frijoles," and by the Cochiti Indians, Yu-ñu-ye, or the place where customs and rites are prescribed. Here were found remains of human habitation in the shape of numerous caves cut in cliffs of friable tufa, varying from 50 to 100 feet in height. In many of the caves which were examined a flooring of fine red clay, very neatly and smoothly spread in several thin layers, is still seen, as also a plastering of red or yellow clay upon the walls. In some of them the lower part of the wall is of one color and the upper part and ceiling of another, the two colors being separated by a broad line of dark brown or black which runs around the cave about two feet from the floor. In the walls were found small niches.

Beneath some of these caves, which were situated higher in

the face of the cliff, were evidences of the former existence of annexed exterior chambers below. The cliff walls beneath these apertures had evidently been hollowed out to form the rear wall of the annexed chamber, and were nicely plastered with red and yellow clay. Rows of small round holes were seen which, it was thought, had been used as rests for the rafters, while large quantities of roughly-squared stones used in building lay scattered about the base of the cliff. In some cases there appeared to be two and even three tiers of houses constructed in this manner.

The ruins of six large circular chambers or estufas and of several other dwellings were found distributed over the slope which reaches from the foot of the cliffs to the small stream that flows in the bottom of the cañon.

Photographs, sketches, and complete notes were also made explanatory of the industries, religion, and habits of the Pueblo Indians of Cochiti, whom Mr. Stevenson visited on his return. These are preserved for future reference and study.

ZUÑI RESEARCHES.

WORK OF MR. F. H. CUSHING.

On the 30th of August Mr. Frank Hamilton Cushing proceeded to the Seneca Reserve, in Western New York, with the Zuñi Indians who had accompanied him on his eastern trip, mentioned in the last annual report. Here he learned important and obscure facts relative to the social organizations of the Seneca, more especially the "medicine" fraternities. In the latter he found evidence of a society of "medicine priests," functionally identical with a similar organization among the Zuñi, viz, that of the Kâ-kâ-thlá-na, or "grand medicine dance." He afterwards went to Zuñi, N. Mex., arriving there on the 23d of September.

Here, in the month of October, he resumed note taking and the sketching of Zuñi dances and ceremonials as they occurred, adding to his vocabularies and memoranda on the sociologic system of the tribe, ceramic art decorations, and mythology. Thence he proceeded to Keam's Cañon, Arizona Territory, the

point of rendezvous for a projected party to Oraibe, one of the Moki towns. Here it was deemed advisable that he alone should make a visit of reconnaissance to Oraibe. Proceeding thither, a severe snow storm compelled him to seek shelter at Wolpi, where he had the good fortune to meet a visiting Oraibe chief, with whom he consulted and negotiated, afterwards, in accordance with authority, making him the messenger of his arrangements for trading with the tribe in question. He then returned to Keam's Cañon.

Pending the arrival of goods at Moki, he returned across country to Zuñi, a measure rendered necessary on account of his relations to the tribe and one enabling him to observe more minutely than on former occasions the annual sun ceremonial.

En route he discovered two ruins, apparently before unvisited, both, according to Zuñi tradition, belonging to the Hlé-e-tâ-kwe, or the northwestern migration of the Bear, Crane, Frog, Deer, Yellow-wood, and other gentes of the ancestral Pueblo. One of these was the outlying structure of K'in 'i K'el, called by the Navajo Zïnni jïńnë, and by the Zuñi, Hé-sho-ta-páthl-tâĭe. In this remarkable ruin he discovered peculiarities worthy of note. It is a two-story building, almost intact, most of the floor of the second story, the roof, lintels, &c., being in a good state of preservation, built of selected red sandstone slabs around the base and over the summit of a huge outcropping bowlder. It is situated in the mouth of one of the arms of a cañon called by the Zuñi K'in 'i K'el, 25 miles northwest of the station of Navajo Springs, on the Atlantic and Pacific Railroad. In the ground room of this structure, leaning against a trap opening in the floor of the second story, he found the poles of a primitive ladder, notched with stone instruments at regular intervals on the corresponding sides. To the lower portion of these poles was bound with yucca fiber a much decayed round, still complete but too much decayed to be disturbed. In the rooms of the second story he observed features indicating the relationship of the building to the ruin of K'in 'i K'el, and thus, in a measure, confirming the Zuñi tradition.

As soon as the ceremonials of the sun had been completed Mr. Cushing again set out for Moki, via Holbrook, Arizona Territory, in company with Nánahe, a Zuñi of Moki nativity, as interpreter, and on the 9th of December he reached the winter camp of the United States Geological Survey, below the town of Holbrook. He was met here by the Director, and from him received orders to invoice the store of trading material at the camp and add to it, in preparation for immediate departure on scientific duty with the expedition in charge of Mr. Victor Mindeleff, an account of which is given below, reaching Oraibe on December 19. On January 19, 1883, he set out on his return to Zuñi, where he continued the work before indicated; also exploring in May the southwest ruin-sections of Zuñi tradition, making important archæologic discoveries near the Escadilla and further north in Eastern Arizona.

RESEARCHES AMONG THE MOKI.

WORK OF MR. VICTOR MINDELEFF

In August Mr. Victor Mindeleff, with an organized party, went to the Moki villages in Northeastern Arizona, where he secured fully detailed architectural plans of the seven inhabited villages, together with sketches and diagrams of constructive details, photographs, and, in general, such data as were necessary for the preparation of accurate large scale models of these pueblos. This work was carried on until November 2, being in charge of Mr. Cosmos Mindeleff during the time of Mr. Victor Mindeleff's absence as mentioned below. The ground plan of an old ruined pueblo, known by the Navajo name of "Talla-Hogan," was also secured This pueblo belonged to the original Province of Tusayan and was the site of an early Spanish mission.

About the end of September Mr. Mindeleff joined Mr. James Stevenson's expedition to the Cliff-ruins of Cañon de Chelly and branches, securing a number of plans and sketches of these remains. He returned to the surveying work at Moki, October 16.

On December 13 he was placed in general charge of an ex-

pedition to Oraibe and the other Moki villages for the collection of ethnologic specimens, assisted in the scientific branch of the work by Mr. F. H. Cushing and in the business of transportation between Moki and the railroad by Mr. J. D. Atkins.

Owing to the unfriendly attitude of the Oraibe only a small collection, numbering about two hundred pieces, could be secured there. After a stay of several days, with no further additions to the collection, camp was moved on December 25 to the vicinity of Ma-shong-ni-vi of the middle mesa. Here about twelve hundred specimens were collected, principally from the inhabitants of the three villages on this mesa. Pottery comprised the largest portion of the collection, although stone implements, dance paraphernalia, and a great variety of designs in basketwork were also well represented. The collection included also more than one hundred and fifty examples of ancient pottery. This feature was the most valuable portion of the collection, as such specimens have become rare and are highly prized by the Moki.

The packing and shipment of all specimens to the railroad were finally accomplished by February 5, 1883, and Mr Mindeleff reported at the office at Washington on February 15.

The necessary data for a full descriptive catalogue of the Oraibe collection were secured by Mr. Cushing and similar data for the collection of ancient ware made at Ma-shong-ni-vi. These catalogues form portions of a special detailed report on Oraibe, in preparation by Mr. Cushing, in which the social and regulative features of Oraibe are treated, together with some notes on their architecture and industrial arts. The peculiar causes of the violent opposition shown by these people to the purposes of the expedition will also be set forth by Mr. Cushing in that paper.

PHOTOGRAPHIC VIEWS.

WORK OF MR. J. K. HILLERS.

Mr. J. K. Hillers, the photographer of the U. S. Geological Survey, in connection with his regular duties, succeeded in obtaining fifty photographic views of the ruins near Fort Win-

gate, N. Mex., and in the Cañon de Chelly, Arizona. These are of much value in supplementing the surveys, descriptions, and explorations of the region.

LINGUISTIC FIELD WORK.

WORK OF MR. J. O. DORSEY.

Rev. J. Owen Dorsey, in September, 1882, visited the reservation of the Six Nations, on Grand River, Upper Canada, and gathered some linguistic material pertaining to the Tutelo, a tribe recently assigned by Horatio Hale to the Siouan family.

In November he went to the Indian Territory for the purpose of spending some time among the Kansa, Osage, and Kwapa, tribes speaking dialects related to that of the Ponka and Omaha, with which he is familiar. On his return to Washington, in February, 1883, he brought the following material:

Kansa.—Most of the pages of the second edition of the Introduction to the Study of Indian Languages were filled. He also obtained grammatical notes; material for a dictionary of about three thousand words; texts, consisting of myths, historical papers, and letters (epistles) dictated in the original by the Indians, to be prepared with interlinear translations; critical notes, and free English translations; an account of the social organization of the tribe, with names of gentes, proper names of members of each gens, &c., the kinship system and marriage laws, with charts; an account of the mourning and war customs, with a curious chart (one similar being used by the Osage) prepared by the leading war chief of the tribe, from one inherited from his grandfather; a partial classification of the flora and fauna known to the tribe; and maps drawn by the natives, with native local names.

Osage.—From the Osage similar information was obtained, with the addition of accounts of a secret order of seven degrees connected with the gentile or clan organization of the tribe and serving as the sole custodian of the tribal traditions. Each of the twenty-one Osage gentes has its peculiar tradition, which is chanted by the principal man of that gens but only in the

presence of the initiated. As Mr. Dorsey had gained portions of similar traditions among some of the cognate tribes, he was able, after repeating these, to obtain from the Osage portions of their traditions, a hundred and six lines of one and fifty-six of another, with the chant and a part of the symbolic chart associated with them.

Kwapa.—From two Kwapa he obtained a small vocabulary, the kinship system of their tribe, the names of some of the gentes and villages, and a few proper names.

WORK OF MRS. E. A. SMITH.

Heretofore the researches of Mrs. Erminnie A. Smith among the Iroquois tribes had been confined to their several reservations in New York State and Upper Canada. During the past year they have been continued in Lower Canada among the descendants of those Iroquois, principally Mohawk, whom the early French missionaries converted to Christianity and transplanted from south of Lake Ontario to the missions provided for them on the banks of the St. Lawrence.

The almost entire isolation of these Indians from the other Iroquois tribes during two hundred years renders a study of their dialect, peculiar customs, and progress toward civilization both interesting and important. Their old aboriginal folk stories, through the influence of the Roman Catholic Church, have been replaced by those of a religious character, such as the wonderful preservation of the old church bell, or the remarkable miracles of their aboriginal saint, Te-gah kwĭtă, whose portrait decorates the sacristy of the mission church where her bones are carefully enshrined and revered to this day.

Although nominally presided over by chiefs, few of the old pagan customs are retained at Caughnawaga. The old wampum belts are, however, carefully preserved. It is worthy of note that the clans of these representatives of the Mohawk outnumber the clans in any of the other Iroquois tribes, and comprise several not found among the others, as the Lark, the Rock, and the Calumet.

The old mission church at Caughnawaga and the Seminary of the Sulpicians at Oka, on the Ottawa River, are now the principal repositories of those sermons, catechisms, vocabularies, grammars, and dictionaries which represent the labors of the French Roman Catholic missionaries among the Iroquois during two hundred years.

Through the courtesy of the Superiors Le Clair and Antoine and the Rev. Father Burtin, several hundred titles were secured by Mrs. Smith for the bibliography of Indian Linguistics in preparation by Mr. Pilling. The most remarkable and the most important of these rare books in manuscript is the French-Mohawk dictionary compiled during the early part of this century by the Rev. Father Marcoux, which was of great utility to Mrs. Smith in her office work, as mentioned under that heading.

WORK OF DR. W. J. HOFFMAN.

From August to November, 1883, Dr. W. J. Hoffman, under the direction of Col. Garrick Mallery, prosecuted investigations among the several Indian tribes of California and Nevada with special reference to gesture language and pictographs. The total number of tribes visited amounts to between forty and fifty, and they are embraced in the following linguistic divisions, viz: Yuman, Shoshonian, Mariposan, Moquelumnan, Yukian, Mendocinan, Copean, Pujunan, and Washoan.

Through the assistance of an intelligent Alaskan, at San Francisco, Cal., an exhaustive collection of Alaskan gestures was obtained, in addition to valuable material and interpretations, with original texts of narratives and records carved on walrus ivory. A number of drawings were also prepared from the original ivory carvings and pictographs in the museum of the Alaskan Commercial Company. Besides these, small collections were obtained from Japanese, and from individual Indians belonging to tribes not included in the above list of linguistic stocks.

WORK OF DR. WASHINGTON MATTHEWS.

Dr. Washington Matthews, Assistant Surgeon U. S. A., while on his regular military duty at Fort Wingate, N. Mex.,

was steadily engaged in collecting material for a grammar and a dictionary of the Navajo language. He was also occupied in the preparation of the paper on "Navajo Silversmiths" and that on "Navajo Weavers," published respectively in the second and third annual reports, and in the investigation of other branches of anthropology in relation to the above mentioned tribe with a view to future publication.

OFFICE WORK.

Former reports have recognized the demand made by the public for certain publications as fundamental to the study of Indian anthropology: to furnish these is conceived to be the first and most obvious duty of the Bureau These publications in the order of inquiry and request are: (1) a series of charts showing the habitat of all tribes when first met by Europeans and at subsequent eras; (2) a dictionary of tribal synonymy, which should refer the multiplied and confusing titles, as given in literature and in varying usage, to a correct and systematic standard of nomenclature; (3) a classification, on a linguistic basis, of all the known Indians of North America, remaining and extinct, into families or stocks.

The order of possible preparation of these publications is the reverse of the above. The charts cannot be drawn until the tribes, as villages, confederacies, and leagues, shall have been resolved from multiplicity and confusion into identification and simplicity. The linguistic classification precedes the whole of the work, and the difficulties attending it have at times suspended its satisfactory progress until expeditions of research had been sent forth to clear up the obstacles of uncertainty or ignorance. Numerous publications of ethnologic charts, of partial synonymies, and of tentative classifications have appeared from various sources, but all have been imperfect and more or less erroneous. The personal attention of the Director and of all the officers and employés of the Bureau has been steadily directed, in addition to the several branches of work from time to time undertaken, to presenting them in a proper form. The labor and study required have been beyond

expression, but may be partially indicated by the fact that, apart from the linguistic and sociologic problems involved, the mere mechanical compilation has produced over twenty thousand cards of synonymy. The present condition of this interconnected work is encouraging.

Col. Garrick Mallery was engaged during the year in the continued study of sign language and pictographs. A number of important collections of gesture signs were procured from parts of the United States not before thoroughly explored in this respect. Collections of great value were also obtained from Japan, Asiatic Turkey, and from several of the Polynesian groups. These increase the probability of preparing a useful monograph on the gesture speech of man.

The amount of material now collected, with its collation and study, confirms the view stated in a former report, that while a general system of gesture speech has long existed among the North American Indians it is not to be regarded as one formal or definite language. Several groups, within which there is a considerable body of distinctive signs, with their centers of origin, are indicated, though, as before explained, the fundamental character of sign language permits of communication by its means between all the groups. Five of these groups appear, from present information, to be defined as follows: First, the Arikara, Dakota, Mandan, Gros Ventre or Hidatsa, Blackfeet, Crow, and other tribes in Montana and Idaho; second, Arapaho, Cheyenne, Pani, Kaiowa, Caddo, Wichita, Apache of Indian Territory, and other tribes in the Southwest as far as New Mexico, and possibly portions of Arizona; third, Pima, Yuma, Papago, Maricopa, Hualpai (Yuman), and the tribes of Southern California; fourth, Shoshoni, Banak, Pai Uta of Pyramid Lake, and the tribes of Northern Idaho and Lower British Columbia, Eastern Washington, and Oregon; fifth, Alaska, embracing the Southern Eskimo, Kenai (Athabaskan), and the Iakutat, and Tshilkaat tribes of the T'hlinkit or Koloshan stock. The gestures of Alaskan tribes present some distinctive features as compared with those of any of the southern groups. The collections of the gestures still used by the Indians of British Columbia and of the northern part of Vancouver's Island, also

by the Iroquois of Canada, are not sufficiently extensive for classification, and are chiefly valuable as illustrating the antiquity and universality of that medium of communication.

The results of Colonel Mallery's study of pictographs are sufficiently indicated in his paper on that subject published in the present volume.

In the whole of these studies Colonel Mallery has been assisted by Dr. W. J. Hoffman.

Mrs. Erminnie A. Smith, who had already collected a vocabulary of eight thousand words in the Tuscarora dialect and a great number in Onondaga and Seneca, found their synonyms in Mohawk in the manuscript dictionary of Father Marcoux before mentioned. From this dictionary she translated over twelve thousand words into English, rewriting the Mohawk and changing the old manner of spelling employed by the missionaries into the phonetic system prescribed by the Bureau for transcribing Indian words. Some of the words preserved in this dictionary have long since fallen into disuse and many are such as would be used only in the service of the church. Those containing records of old customs or which are suggestive of Indian characteristics have been carefully analyzed and noted by Mrs. Smith in this translation.

A chrestomathy of the Mohawk dialect has also been carefully filled out by Mrs. Smith during the year. This contains the names of many towns and their derivations, as well as a large number of names of trees, plants, and shrubs, names of the months, days, &c., and their connotation.

A table containing a large number of words in use among the isolated Mohawk of Caughnawaga and their synonyms as used by the Mohawk on the "Six Nations Reserve," Ontario, Canada, exhibits as complete differences in words representing the same object or thought between these two separated portions of one tribe as exists between corresponding words in different dialects. The completion of this Iroquoian dictionary composed of synonyms of the six dialects may be expected to reveal many important facts regarding the formation of dialects and relating to Indian languages in general.

Rev. J. Owen Dorsey was engaged during much of the year

in the preparation of the elaborate paper on Omaha Sociology, with maps and many illustrations, which appeared in the third annual report of the Bureau. He also continued and carried to completion 665 pages, quarto, of the Dakota-English part of the Dakota dictionary of Rev. S. R. Riggs, D. D. The venerable author did not live to see the publication of his work in the revised form. He died at Beloit, Wis., in August, 1883 For several months before his death he was unable, on account of his failing health, to correct the proof-sheets, which also compelled him to transfer the preparation of the English-Dakota part of the dictionary to another missionary, Rev. John P. Williamson.

On his return from field work, Mr. Dorsey was engaged in the preparation of a dictionary of the Kansa language.

Mr. Albert S. Gatschet was engaged in compiling from his Klamath-English dictionary, completed and stereotyped in 491 pages, quarto, a second part forming an English-Klamath dictionary. This language is spoken in Southwestern Oregon by the Klamath Lake and Modoc Indians, and a series of texts in that language will accompany the dictionary.

In compiling the English-Klamath portion of the dictionary, Mr. Gatschet confined himself to the terms embodied in Part I, although the material had increased in his hands since the completion of the latter. He, however, increased the value of this manual by not confining himself to a mere accumulation of the corresponding terms in each language. An attempt at a synonomy of this Oregonian tongue was made, and sometimes it became necessary to present the distinctions in elaborate articles. The extreme complexity of Klamath derivation, through prefixes and suffixes, enhances the difficulty as well as the value of the synonymic arrangement of Part II. It is to be noted that here, as well as in many other unwritten languages, there are no single equivalents for many abstract terms of English, as *distance*, *hurry*, *quality*, *time*, or for such verbs as *to behave*, *to let*, *to prompt*, but that a multitude of phrases, locutions, and compound terms are required by which alone these ideas can be expressed with accuracy.

Incidental work was done in augmenting the synonomy of

North American tribes by many hundred new cards of reference.

Mr. Frank Hamilton Cushing was engaged at Washington during the months of July and August, 1882, in transcribing his voluminous field notes on the gentile, esoteric, religious, and governmental organizations of the Zuñi, preparatory to an essay on the Zuñi Sociology in a broader sense He also prepared the greater portion of his field notes on other subjects, including archæologic and linguistic studies, for systematizing in a series of short papers, when such should be rendered possible by additional research, for which he resumed field work, as specified under that heading

By request of the Director, he prepared in April, for reading before the National Academy of Sciences, a short paper on the "Relationship between Zuñi Mythologic and Sociologic Sys tems and Institutions." Following out some of the principles laid down in that address, he wrote a paper on Zuñi Fetiches, which was published in the second annual report of the Bureau.

Mr. James C. Pilling continued the preparation of a Bibliography of North American Languages, but, as stated in previous reports, was able to give to it but a portion of his time. During the year proof-sheets of pages 97 to 512 were received from the Public Printer, and copies of each signature were distributed to competent persons at a distance for the purpose of obtaining suggestions, additions, and corrections. Among those who greatly aided the work were Señor Icazbalceta, of the city of Mexico; Mr. Wilberforce Eames, of New York City; Mr. C. A. Cutter, of the Boston Athenæum; and Mr. Addison Van Name, of Yale College.

In December, 1882, Mr. Pilling made a trip to several libraries in New York City, Boston, and Providence for the purpose of settling certain disputed points; and in the following spring he visited the library of Mr. H. H. Bancroft, at San Francisco, Cal. While en route, the archives at Chihuahua, in Mexico, were examined. Later, the library of the Wisconsin Historical Society, at Madison, and the Cincinnati Public Library were visited and good results obtained.

Mr. Charles C. Royce, who, for nearly two years, had been

engaged in duties not connected with the Bureau of Ethnology, resumed his former relations therewith on the 1st of January, 1883, since which time he has been occupied in the continuation of an historical Atlas of Indian Affairs, an outline sketch of the plan of which was given in the first annual report of this Bureau. Notwithstanding many difficulties encountered in procuring detailed and accurate information, occasioned by the confusion or the careless destruction of many of the earlier official records of the Government, Mr. Royce has made satisfactory progress toward the completion of the work. This, when finished, will afford a complete and valuable history of the official relations that have existed between the Government of the United States and the various Indian tribes from the beginning of the Federal period down to the present day.

A prominent feature of the work will be a series of maps of the different States, about 27x34 inches in size, upon which will be delineated the boundaries of the various cessions of land that have been made to the United States, from time to time, by the different Indian tribes by treaty or other agreement. Upon these maps will also be designated the location of all points or places of historical interest in connection with Indian wars and diplomacy, as well as the former and present location of all known Indian villages. Accompanying this series of maps will be an historical text, giving a brief recital of the location, character, and condition of each tribe in its earliest relations with the whites; its migrations, wars, and diplomacy from that date to the formation of the Federal Government, and from thence a more detailed and particular account of the various treaties entered into with the United States, the causes that led to the negotiation of such treaties, and the results emanating therefrom. The work in its present condition shows the completion of the maps and the delineation thereon of the various cessions, primary and secondary, of the States of Ohio, Indiana, Illinois, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Arkansas, Missouri, Iowa, Michigan, and Kansas, and Indian Territory. The maps of Wisconsin, Minnesota, Nebraska, Dakota, and Colorado are not entirely completed. For the his-

torical text, a large amount of material in the shape of notes has been collected concerning the various tribes, and much of the manuscript has already been prepared concerning the history of the Cherokee, Choctaw, Chickasaw, Creek, Shawnee, Wyandot, Miami, Kickapoo, Kaskaskia, Peoria, Piankeshaw, Wea, Osage, and other tribes.

Mr. HENRY W. HENSHAW was engaged during the year in tabulating the returns of the Indian census and in preparing, from those returns, from historical data, and from his own field notes, a report on Indian industries. This report will explain the pristine industries and means of subsistence of the several tribes and trace their advance toward civilization.

Mr. WILLIAM H. HOLMES has continued to supervise the illustrations of the publications of the Bureau, and has had general charge of the collections made under it and deposited in the National Museum. In order to facilitate this work he has been made honorary curator of pottery in that institution.

Collections of variety and importance were made during the year. A number of utensils of stone from the southern shore of Humboldt Lake, Nevada, were procured by Mr. I C. Russell, of the United States Geological Survey. They comprised about a dozen mortars and pestles of large size and rather rude finish, which were probably used by some of the modern tribes of the region in pounding grass seeds.

A collection of pottery made by Messrs. Cushing and Mindeleff comprises a series of antique pieces of great interest, and Mr. James Stevenson has added largely to the collections of modern Pueblo art products.

A small collection of antiquities, consisting chiefly of stone implements from Oregon, was presented by Capt. Charles Bendire, U. S. A.

Much material has been added to the collection from the mounds by Professor Thomas and his assistants, as elsewhere specified in detail.

In addition to the above Mr. Holmes has undertaken such archæologic studies as are mainly connected with art. The scope of these studies is indicated in the three papers presented in this volume.

Mr. Victor Mindeleff was occupied during the month of July and the early part of August in completing a large scale model of the pueblo of Zuñi, N. Mex., the plans and other data for which had been collected during the preceding year.

After his return from the field in February, 1883, he commenced a series of models of the seven Moki villages to a scale and finish uniform with the model of Zuñi. This work was carried on until June, when it was interrupted for the preparation of a series of duplicate models of cliff ruins and pueblos, which were exhibited at the Louisville Exposition in the autumn of 1883.

Prof. Cyrus Thomas, in addition to the general direction of the mound explorations already described, was personally engaged in marking and arranging the collections obtained and in preparing catalogues of them for the Bureau and the National Museum.

He was also engaged in a study on the results of the explorations, in connection with former knowledge on the subject, and in preparing a paper on what he designates as the "northern type" of burial mounds, embraced in the district of the United States lying north of Tennessee and east of the Rocky Mountains but including North Carolina. This paper will appear in the fifth annual report of the Bureau.

Dr. H. C. Yarrow continued and nearly completed his exhaustive work on the mortuary customs of the North American Indians, and was also occupied in the preparation of a paper upon their medical practices.

Prof. Otis T. Mason made further progress in his report on the history of education among the North American Indians. In this he has studied the work of the Indian Office, corresponded with all the schools and colleges, and made abstracts from the enumerators' sheets of the Tenth United States Census respecting the Indians not on reservations, besides compiling the special statistics of the Indian census.

Mr. Jeremiah Curtin became connected with the Bureau on February 5, 1883, when he began an examination of the linguistic material belonging to it; also, with the assistance of Mr. Perryman, of the Indian Territory, he filled a volume of

the "Introduction to the Study of Indian Languages" with words and data from the Muskoki or Creek language, and in addition to the words indicated in the Introduction eight hundred others were collected. Of these nearly three hundred were verbs. He then transferred to the recognized alphabet a vocabulary of words in the Caddo language, and arranged in the same alphabet a considerable collection of words in the Chinook jargon made by Lieutenant Belden. This collection contains many words not found in Gibbs's vocabulary and will be useful in a new publication of the jargon or as a contribution to a collation of its different existing forms. He also filled a volume of the Introduction in Seneca and began the collection of the Seneca folk lore, obtaining some suggestive tales and accounts of beliefs and superstitions.

ACCOMPANYING PAPERS.

The papers presented in this volume fairly illustrate the number of objects and the range of facts collected by the Bureau, and the character of the studies made thereon, in conducting its investigations. These papers are all so intimately connected with the graphic or plastic arts in their origin and application as to have required a large amount of illustration, there being five hundred and sixty-five figures in the text besides eighty-three full page plates. Special mention of each of these papers follows in their order as printed.

It is proper to note that two other papers were prepared and stereotyped with the intention of including them in this volume, but it was found that they would increase its bulk to inconvenience. These last mentioned papers, which will appear in the fifth annual report, are as follows:

Burial mounds of the northern sections of the United States, by Prof. Cyrus Thomas, pp. 1–119.

The Cherokee nation of Indians; a narrative of their official relations with the Colonial and Federal Governments, by Charles C. Royce, pp. 121–378.

PICTOGRAPHS OF THE NORTH AMERICAN INDIANS, BY GARRICK MALLERY.

In the winter of 1876, Brevet Lt. Col. Garrick Mallery, U. S. A, was in command at Fort Rice, on the Upper Missouri

River, and became acquainted with a pictorial chart represented to be a history of the Dakota. He ascertained that its true character was not historic, but that its design was to designate successive years by the most remarkable, or rather the most distinguishable, events that occurred in each. The chart, therefore, became useful as a calendar, and was actually in use as such. Colonel Mallery published it, with interpretations and explanations, under the title of "A Calendar of the Dakota Nation," in a bulletin of the United States Geological and Geographical Survey of the Territories, issued in 1877.

The diffusion of this publication, awakening general interest on the subject among Army officers and other persons in the Indian country, resulted in bringing to light other copies of the chart and additional facts relating to its origin, interpretation, and use. The material thus gathered has been the nucleus around which further information on the subject of pictography has been accumulated. The systematic study of sign language, upon which subject Colonel Mallery prepared a preliminary paper published in the first annual report, also brought under his observation many points connected with pictography, both modes of expression being graphic and pictorial. The research, study, and correspondence for the preparation of a monograph on the gesture speech of man has been continued by him since the preliminary paper before mentioned, with which a similar undertaking upon the general subject of picture writing has proceeded pari passu. Both of these modes of conveying ideas and facts, by one of which they are also recorded, prevail among the North American Indians with a development beyond that found among any other existing peoples, and therefore the study of both developments among them is most advantageous when combined.

It was deemed advisable to pursue a plan successfully adopted by the Bureau in other departments of work, viz, to publish a preliminary paper before undertaking an exhaustive monograph. By this means the amount and character of the information so far obtained is communicated to persons already interested in the subject. The interest of others is excited and their collaboration is invited, while their researches

are facilitated by the suggestions derived from the author's precursory experiences. The present paper carries out that plan. All other intentions are subordinated in order to explain the characteristics of pictographs, to classify them conveniently, and to offer suggestions for the collection, description, and study of specimens. Theories are postponed until after careful examination of exhaustive collections.

For this purpose the author has first stated the distribution in North America of pictures on rocks, either painted or incised or both, with a few illustrative comparisons from foreign countries. He has then enumerated the instruments used at different times in pictography, together with the coloring matters employed and the methods of application. The materials upon which pictographs are made are discussed, the objects being divided into natural and artificial. The first division includes many objects, consisting chiefly of stone, bone, living trees, wood, bark, skins, feathers, gourds, horse hair, shells, earth, and sand, and the human person. Designs upon the human person are in paint and by tattooing. Under this head much information is presented for the first time, and it is compared with some recently published accounts of the process in the Pacific Islands.

The subject is then considered with reference to the special purposes for which pictography has, in fact, been employed by the North American Indians. They are: 1st, Mnemonic, embracing order of songs, traditions, treaties, war, and time; 2d, Notification, comprising notice of departure and direction, of condition, warning, and guidance, geographic features, claim or demand, messages and communications, and record of expeditions; 3d, Totemic: this embraces tribal, gentile, clan and personal designations, insignia, and tokens of authority, personal names, property marks, status of individuals, and signs of particular achievements; 4th, Religious, comprising mythic personages, shamanism, dances and ceremonies, mortuary practices, grave posts, charms, and fetiches; 5th, Customs and habits, requiring details rather than classification; 6th, Tribal history; 7th, Biographic, in which are examples

giving continuous record of events in a life and other cases of particular exploits and occurrences.

The manner in which pictographs have long been employed by the North American Indians, showing their advance from simple objective representations to true ideographs, is then discussed, and instances are given of their expression of abstract ideas of emblems and of symbols. Indications for classification are noted by identifying the pictographers through their general style or type and through the presence of characteristic objects. Modes of interpretation are recommended, with cautions originating in experience. Attention is invited to the important bearing of conventionalization, hints are given for avoiding errors, and, finally, practical suggestions are submitted intended to assist investigation and simplify its record. Under every heading several examples appear, with requisite graphic illustrations.

The circumstances under which Colonel Mallery entered upon the study of pictography, as above explained, are both fortunate and exceptional. Some of the writers who have dealt with the subject, either in treatises or in fragmentary notices, have regarded in the nebulous light of hieroglyphic symbols the specimens of petroglyphs or other forms of picture writing treated by them, while others have endeavored to distort them into alphabets, and still others have disparaged them as idle scrawls. The first studies of Colonel Mallery were upon the remarkable chart before mentioned, which was altogether objective and practical, though beautifully illustrating ideography. His next study in this direction, sign language, was also practical, objective, and ideographic, showing instructive parallels with the Dakota calendar and with other forms of pictography then thoroughly interpreted. He therefore approached the subject from a point of view the reverse of that taken by most previous writers. There was in him no bias toward a mystic interpretation, or any predetermination to discover an occult significance in pictographs, whether on rocks, skins, or bark. The probability appeared, from his actual experience, that the interpretation was a simple and direct, not a mysterious and involved process, and the

course of his studies naturally tended to ascertain, collocate, and compare facts, but to eschew suppositions. At the same time, the author by no means denies or forgets that poetry and imagination may be discerned in the Indian pictographs as well as in their gesture speech and in their spoken languages. He acknowledges, and illustrates by examples given, that pictographs are, in many cases, figurative, metaphoric, and symbolic. It is also recognized that in a very few instances devices may be so far esoteric as to have been adopted as emblems, with some concealed significance, by the secret religious associations long known to have existed among the tribes. This admission is not, however, to allow of resort to mystic symbolism as a normal mode of interpretation. In the examination of pictographs of the North American Indians, so far as it has progressed, the order in which to direct interpretation is the same as that of theoretic evolution and of ascertained historic sequence. The probability is that they are, 1st, objective representations; 2d, that they are ideographic, and 3d, with the burden of proof against the proposition, that they have some connection with symbolism. It is well understood that any design primarily objective can be adopted as an ideograph and furthermore can be used symbolically. An example of this used by the author is the cross, which design appears in many significations given in the paper with reference exclusively to North American Indians, and many other instances of this multifarious use in all parts of the world are familiar. It is one of the most readily executed devices and has been employed by all peoples objectively, ideographically, and symbolically.

The author has, therefore, presented the facts so far known to him, simply as facts. When a pictograph has appeared from intrinsic or extrinsic evidence to convey an idea beyond its objectivity, the fact has been noted. Decisive extrinsic evidence in each case is required for the adoption of mystic symbolism as the true mode of interpretation. By this method of treatment, the subject of pictographs has been rescued from the limbo of morbid fancy to be marshaled with proper place in the evolutionary order of human culture.

POTTERY OF THE ANCIENT PUEBLOS, BY WILLIAM H. HOLMES.

This paper is a study of the pottery of the ancient Pueblo Indians made on the valuable collection obtained by the Bureau of Ethnology, which had commenced with collections made personally by Major Powell before the establishment of the Bureau. This study relates to the more ancient or prehistoric groups of ware in that collection, which are considered under the heads of coiled ware, plain ware, and painted ware, the first being the most archaic. All of these, with the processes of their manufacture, are described, distinguished, and illustrated. A full discussion of the more modern forms is reserved for future papers.

The distribution and the environment of the Pueblo peoples are specified, but the author does not study the arts of their province with the direct object of ascertaining the origin of the peoples themselves or of their arts. He has used the information in his possession to elucidate the processes by which culture has been achieved and the stages through which it has passed. It is to be noted, however, that the Pueblos were sedentary, and thus practiced ceramic art continuously for a long period; also, that in their arid country there was special need of vessels for the transportation and storage of water. From the first of these peculiarities of habitat and environment, their ceramic art is without any indications of distinct periods; from the second, very many specimens have been produced and preserved.

The author directs attention to the practical details, viz, material used in pottery (often clay of a remarkably fine grain), to the modes of tempering, construction, surface finish, firing, hardness, and varieties of color and of form. The Pueblo pottery is also classified by its functional characteristics. In examining the illustrations some designs will attract attention from their resemblance to the most exquisite patterns of classic art and of Oriental decoration, with which they will bear favorable comparison.

The special feature of this paper is that it explains more fully than has been explained before, with practical examples,

the development of geometric ornamentation. It is shown that forms of decoration, originating in the previously existing textile art and hence purely conventional, were imposed upon the potter's art, which, at the time of the Spanish conquest, had not yet acquired a style purely its own.

ANCIENT POTTERY OF THE MISSISSIPPI VALLEY, BY WILLIAM H. HOLMES.

The ancient relics discussed in this paper are divided into three groups, viz, those found in the Upper Mississippi, the Middle Mississippi, and the Lower Mississippi or Gulf province. The much greater amount of ware obtained from the mounds and graves of the province of the Middle Mississippi Valley, as compared with that found in the other districts, has required that this paper should be mainly devoted to this province. It embraces the greater part of the States of Missouri, Arkansas, and Tennessee, large portions of Kentucky, Mississippi, and Illinois, and extends into Iowa, Alabama, Indiana, and Texas. The author dwells upon the age of the objects, their use, construction, material, colors, form, finish, and ornamentation. He gives special classifications and descriptions, with numerous illustrations, under the heads of bowls, pot shaped vessels, wide mouthed bottles or jars, and high necked bottles. It is noted that the vessels, though generally found in connection with human sepulchers, were not to any extent cinerary, probably not even mortuary, in the sense of construction for the purpose of inhumation with the dead. They were ordinary receptacles for food and drink placed in the grave, together with other possessions of the deceased. The material employed in their manufacture was clay in all grades of refinement. The tempering materials, varying in quantity, were shells, sand, and pulverized potsherds. The stage of the art represented was that of primitive hand building. No lathe or wheel was used. Molds, such as could be made from baskets, nets, and coarse cloth, were employed in some sections. The period was also one of open-air baking. A prominent feature is the great diversity of form, indicating the long practice of the art, a high specialization of

uses and considerable variety in the originals copied. The manual skill was of a fair order, and symmetry of form, combined with grace of outline, was achieved without the use of the wheel. The rank of this ware is higher in these respects than that of the prehistoric pottery of Central and Northern Europe, though inferior to that of Mexico, Central America, and Peru. In characterizing the degree of culture represented by this ware, Mr Holmes decides that there is no feature in it that cannot reasonably be attributed to the more advanced historic tribes of the valley where it is found. It indicates a culture differing in many particulars from that of the Pueblo Indians, ancient or modern, but, on the whole, is rather inferior to it.

This paper is especially valuable to American archæologists in its relation to the culture system of the people who built the mounds, theories upon which have been so numerous and so fanciful.

ORIGIN AND DEVELOPMENT OF FORM AND ORNAMENT IN CERAMIC ART, BY WILLIAM H. HOLMES.

The two papers last mentioned were preceded by a paper from the same author, "Prehistoric textile fabrics of the United States, derived from impressions on pottery," published in the third annual report. These three papers present the results so far obtained by the author, each being a detailed study in its own field, of the objects collected and discussed. While each study is complete in itself, it shows by comparison its relation to other groups. The objects are presented, compared, classified, and studied in the same manner and with the same intention as those with which the naturalist uses the specimens within his domain.

The prominent feature of the present paper, which combines the results of the three former papers, is that it presents the evolution of form and ornament in the ceramic art and suggests the same evolution in all other developments of art. The course of development here as elsewhere is shown to proceed from the simple to the complex, and the causes and processes of the developments are explained, analyzed, clas-

sified, and illustrated from examples never before presented. The accessible material on the subject shows that in America there is opportunity for the study of the origin of art beyond any hitherto enjoyed in the Eastern Hemisphere. In the order of evolution, the character of the specimens now under examination ends where classic art begins, and though the recent discoveries by Schliemann and others have brought to notice the lower archæologic substratum of the East, its productions are few and meager compared with the multitudes of representative objects of the same general character already in the National Museum. These now open to the student the advantage of a method which examines into the beginnings of art in reference to form and ornamentation, as well as into the earliest traces of manufacture or construction and of function, which show a widely different evolutionary line. Mr. Holmes does not consider that he has made more than a partial and tentative paper on the subject, and he is preparing a monograph on a comprehensive basis. The present summary is confined to the geometric side of the study. Otherwise considered, it is the non-ideographic side continued upwards until it reaches the point where it meets the ideographic side, the history and evolution of which are distinct. The general observation to be deduced from the subject, as now presented, is that no metaphysical law of beauty is to be ascertained. The æsthetic principle is not to be found directly in or from nature, but is an artificial accretion of long descended imitations of objective phenomena. Objects are not made because they are essentially pleasing, but are actually pleasing because they have been customarily made. The primitive artist does not deliberately examine the departments of nature and art, and select for models those things which are most agreeable to an independent fancy, nor even those which simple reasoning would decide upon as most convenient Neither does he experiment with any distinct purpose to invent new forms. What he attempts in improvement is what happens to be suggested by some preceding form familiar to him. Each step is not only limited but prescribed by what he already possesses in nature or in art, and knowing his resources his results can be

closely predicted. On the other hand, knowing his products, much can be safely predicated of his environment and past stages of development.

Mr. Holmes, by his artistic analysis and philosophic classification, has set forth the laws of this branch of research more clearly and more completely than any other student of the subject. Though some of his propositions are not presented by him as entirely original, even those are enforced by example and made intelligible by illustration, so as to be substantially novel to most readers. Indeed, the general result of his studies as expressed differs widely from the current conservative theories.

A STUDY OF PUEBLO POTTERY, AS ILLUSTRATIVE OF ZUÑI CULTURE GROWTH, BY FRANK HAMILTON CUSHING.

Mr. Cushing's paper, while on the same general subject as that of Mr. Holmes first above mentioned, differs from the latter in that it presents additional evidence of a different kind in support of the propositions deduced which are common to both writers. Mr. Holmes treats of the objects on which his study is based wholly from the standpoint of an archæologist. Mr. Cushing has had and used the opportunity to examine etymologically the names of the objects which have been retained, even when their forms and uses have been modified, and also to observe the minute processes of their present manufacture. By noticing the traces in the language of the Zuñi and their continued employment of some archaic and apparently objectless methods, only to be explained through their traditions and mythology, the evolutionary history of form and ornament among them is set forth with surprising completeness.

The author first explains the effect upon the Zuñi art of their peculiar habitat, not only in the requirements of their semi-desert region, but in the necessary tendency towards rectangular forms in their primitive architecture.

The logical inductions made by Mr. Holmes from his point of examination, as before explained, are confirmed by the additional considerations presented by Mr. Cushing; in particular, that the general effect of gourd forms suggested basket

types and that the latter produced the forms and ornamentation of earthenware. That the forms and ornaments were reproduced strictly through the effect of custom and association is shown by an amount and kind of concurrent evidence never before so well presented. It is equally remarkable and well established that the most æsthetically beautiful of the forms have been produced merely from the absolute requirements of manufacture, and also that many designs, apparently purely ornamental and symbolic, owe their origin to necessity and servile imitation.

Mr. Cushing agrees with the other authors of the papers in this volume in his warning against the attribution of symbolism without special evidence. While it is shown by him that symbolism exists among the modern Zuñi, it is also clear that they have applied symbolic as well as emblematic ideas to designs which at first had no significance. That ascertained fact alone should prevent an attempt at symbolic interpretation when not indicated in any other manner than by the figures themselves.

Since no subjective principle has had an important influence upon form and ornament, their development being thoroughly objective, its history can be traced with far more certainty than was once supposed. The archæologist can be guided by the indications which form and ornament afford with as much accuracy as by any particulars of material, construction, and function, with which they are closely connected and which they explain.

From the studies so far made in the ceramic art of the North American Indians, it seems possible to deduce general laws applicable to the study of pottery wherever found, and to discover what were the types of the pre-ceramic vessels, thereby deriving information as to the environment of their makers before the latter had acquired the potter's art, and therefore anterior to the period of any relics. Thus their lost history may, to a certain extent, be recovered. Such laws will assist the archæologists of the Old World, where the relics yet found of a corresponding culture period have been less numerous and certainly afford a less continuous history and explanation.

The results of all the studies made by the writers in this volume and their colaborers in the Bureau favor the view of a continuity of the pre-Columbian population of North America, subject to known evolutionary laws, as against cataclysmic theories postulating intrusive or extinct races, such as the supposititious "Mound Builders" or "Cliff Dwellers."

EXPENDITURES.

Classification of expenditures incurred during the fiscal year ending June 30, 1883.

Classification.	Amount expended.
A. Services	$24,917 84
B. Traveling expenses	2,291 59
C. Transportation of property	876 00
D. Field subsistence	1,294 52
E. Field supplies and expenses	1,123 26
F. Field material	503 56
G. Instruments	.....
H. Laboratory material	.....
I. Photographic material	334 51
K. Books and maps	370 00
L Stationery and drawing material	.....
M. Illustrations for reports	254 00
N. Office rents	.....
O. Office furniture	23 60
P. Office supplies and repairs	19 00
Q. Storage	24 75
R. Correspondence	12 15
S. Articles for distribution to Indians	111 62
T. Specimens	2,730 48
Balance on hand	113 12
Total	35,000 00

ACCOMPANYING PAPERS.

SMITHSONIAN INSTITUTION——BUREAU OF ETHNOLOGY.

PICTOGRAPHS

OF THE

NORTH AMERICAN INDIANS.

A PRELIMINARY PAPER.

BY

GARRICK MALLERY.

3–4

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ON THE PICTOGRAPHS OF THE NORTH AMERICAN INDIANS.

By Garrick Mallery.

INTRODUCTORY.

A pictograph is a writing by picture. It conveys and records an idea or occurrence by graphic means without the use of words or letters. The execution of the pictures of which it is composed often exhibits the first crude efforts of graphic art, and their study in that relation is of value. When pictures are employed as writing the conception intended to be presented is generally analyzed, and only its most essential points are indicated, with the result that the characters when frequently repeated become conventional, and in their later forms cease to be recognizable as objective portraitures. This exhibition of conventionalizing also has its own import in the history of art.

Pictographs are considered in the present paper chiefly in reference to their significance as one form of thought-writing directly addressed to the sight, gesture-language being the other and probably earlier form. So far as they are true ideographs they are the permanent, direct, visible expression of ideas of which gesture-language gives the transient expression. When adopted for syllabaries or alphabets, which is known to be the historical course of evolution in that regard, they have ceased to be the direct and have become the indirect expression of the ideas framed in oral speech. The writing common in civilization records sounds directly, not primarily thoughts, the latter having first been translated into sounds. The trace of pictographs in the latter use shows the earlier and predominant conceptions.

The importance of the study of pictographs depends upon their examination as a phase in the evolution of human culture, or as containing valuable information to be ascertained by interpretation.

The invention of alphabetic writing being by general admission the great step marking the change from barbarism into civilization, the history of its earlier development must be valuable. It is inferred from internal evidence that picture-writing preceded and originated the graphic systems of Egypt, Nineveh, and China, but in North America its use is still modern and current. It can be studied there, without any

requirement of inference or hypothesis, in actual existence as applied to records and communications. Furthermore, its transition into signs of sound is apparent in the Aztec and the Maya characters, in which stage it was only arrested by foreign conquest. The earliest lessons of the birth and growth of culture in this most important branch of investigation can therefore be best learned from the Western Hemisphere. In this connection it may be noticed that picture-writing is found in sustained vigor on the same continent where sign-language has prevailed or continued in active operation to an extent unknown in other parts of the world. These modes of expression, *i. e.*, transient and permanent idea-writing, are so correlated in their origin and development that neither can be studied with advantage to the exclusion of the other.

The limits assigned to this paper allow only of its comprehending the Indians north of Mexico, except as the pictographs of other peoples are introduced for comparison. Among these no discovery has yet been made of any of the several devices, such as the rebus, or the initial, adopted elsewhere, by which the element of sound apart from significance has been introduced.

The first stage of picture-writing as recognized among the Egyptians was the representation of a material object in such style or connection as determined it not to be a mere portraiture of that object, but figurative of some other object or person. This stage is abundantly exhibited among the Indians. Indeed, their personal and tribal names thus objectively represented constitute the largest part of their picture-writing so far thoroughly understood.

The second step gained by the Egyptians was when the picture became used as a symbol of some quality or characteristic. It can be readily seen how a hawk with bright eye and lofty flight might be selected as a symbol of divinity and royalty, and that the crocodile should denote darkness, while a slightly further step in metaphysical symbolism made the ostrich feather, from the equality of its filaments, typical of truth. It is evident from examples given in the present paper that the North American tribes at the time of the Columbian discovery had entered upon this second step of picture-writing, though with marked inequality between tribes and regions in advance therein. None of them appear to have reached such proficiency in the expression of connected ideas by picture as is shown in the sign-language existing among some of them, in which even conjunctions and prepositions are indicated. Still many truly ideographic pictures are known.

A consideration relative to the antiquity of mystic symbolism, and its position in the several culture-periods, arises in this connection. It appears to have been an outgrowth of human thought, perhaps in the nature of an excrescence, useful for a time, but abandoned after a certain stage of advancement.

A criticism has been made on the whole subject of pictography by Dr. Richard Andree, who, in his work, Ethnographische Parallelen und Vergleiche, Stuttgart, 1878, has described and figured a large number of

examples of petroglyphs, a name given by him to rock-drawings and adopted by the present writer. His view appears to be that these figures are frequently the idle marks which, among civilized people, boys or ignorant persons cut with their pen-knives on the desks and walls of school-rooms, or scrawl on the walls of lanes and retired places. From this criticism, however, Dr. Andree carefully excludes the pictographs of the North American Indians, his conclusion being that those found in other parts of the world generally occupy a transition stage lower than that conceded for the Indians. It is possible that significance may yet be ascertained in many of the characters found in other regions, and perhaps this may be aided by the study of those in North America; but no doubt should exist that the latter have purpose and meaning. Any attempt at the relegation of such pictographs as are described in the present paper, and have been the subject of the study of the present writer, to any trivial origin can be met by a thorough knowledge of the labor and pains which were necessary in the production of some of the petroglyphs described.

All criticism in question with regard to the actual significance of North American pictographs is still better met by their practical use by historic Indians for important purposes, as important to them as the art of writing, of which the present paper presents a large number of conclusive examples. It is also known that when they now make pictographs it is generally done with intention and significance.

Even when this work is undertaken to supply the demand for painted robes as articles of trade it is a serious manufacture, though sometimes imitative in character and not intrinsically significant. All other instances known in which pictures are made without original design, as indicated under the several classifications of this paper, are when they are purely ornamental; but in such cases they are often elaborate and artistic, never the idle scrawls above mentioned. A main object of this paper is to call attention to the subject in other parts of the world, and to ascertain whether the practice of pictography does not still exist in some corresponding manner beyond what is now published.

A general deduction made after several years of study of pictographs of all kinds found among the North American Indians is that they exhibit very little trace of mysticism or of esotericism in any form. They are objective representations, and cannot be treated as ciphers or cryptographs in any attempt at their interpretation. A knowledge of the customs, costumes, including arrangement of hair, paint, and all tribal designations, and of their histories and traditions is essential to the understanding of their drawings, for which reason some of those particulars known to have influenced pictography are set forth in this paper, and others are suggested which possibly had a similar influence.

Comparatively few of their picture signs have become merely conventional. A still smaller proportion are either symbolical or emblematic, but some of these are noted. By far the larger part of them are merely

mnemonic records and are treated of in connection with material objects formerly and, perhaps, still used mnemonically.

It is believed that the interpretation of the ancient forms is to be obtained, if at all, not by the discovery of any hermeneutic key, but by an understanding of the modern forms, some of which fortunately can be interpreted by living men; and when this is not the case the more recent forms can be made intelligible at least in part by thorough knowledge of the historic tribes, including their sociology, philosophy, and arts, such as is now becoming acquired, and of their sign-language.

It is not believed that any considerable information of value in an historical point of view will be obtained directly from the interpretation of the pictographs in North America. The only pictures which can be of great antiquity are rock-carvings and those in shell or similar substances resisting the action of time, which have been or may be found in mounds. The greater part of those already known are simply peckings, etchings, or paintings delineating natural objects, very often animals, and illustrate the beginning of pictorial art. It is, however, probable that others were intended to commemorate events or to represent ideas entertained by their authors, but the events which to them were of moment are of little importance as history. They referred generally to some insignificant fight or some season of plenty or of famine, or to other circumstances the evident consequence of which has long ceased.

While, however, it is not supposed that old inscriptions exist directly recording substantively important events, it is hoped that some materials for history can be gathered from the characters in a manner similar to the triumph of comparative philology in resurrecting the life-history and culture of the ancient Aryans. The significance of the characters being granted, they exhibit what chiefly interested their authors, and those particulars may be of anthropologic consequence. The study has so far advanced that, independent of the significance of individual characters, several distinct types of execution are noted which may be expected to disclose data regarding priscan habitat and migration. In this connection it may be mentioned that recent discoveries render it probable that some of the pictographs were intended as guide-marks to point out trails, springs, and fords, and some others are supposed to indicate at least the locality of mounds and graves, and possibly to record specific statements concerning them. A comparison of typical forms may also usefully be made with the objects of art now exhumed in large numbers from the mounds.

Ample evidence exists that many of the pictographs, both ancient and modern, are connected with the mythology and religious practices of their makers. The interpretations obtained during the present year of some of those among the Moki, Zuñi, and Navajo, throw new and strong light on this subject. It is regretted that the most valuable and novel part of this information cannot be included in the present paper,

as it is in the possession of the Bureau of Ethnology in a shape not yet arranged for publication, or forms part of the forthcoming volume of the Transactions of the Anthropological Society of Washington, which may not be anticipated.

The following general remarks of Schoolcraft, Vol. I, p. 351, are of some value, though they apply with any accuracy only to the Ojibwa and are tinctured with a fondness for the mysterious:

> For their pictographic devices the North American Indians have two terms, namely, *Kekeewin*, or such things as are generally understood by the tribe; and *Kekeenowin*, or teachings of the *medas* or priests, and *jossakeeds* or prophets. The knowledge of the latter is chiefly confined to persons who are versed in their system of magic medicine, or their religion, and may be deemed hieratic. The former consists of the common figurative signs, such as are employed at places of sepulture, or by hunting or traveling parties. It is also employed in the *muzzinábiks*, or rock-writings. Many of the figures are common to both, and are seen in the drawings generally; but it is to be understood that this results from the figure-alphabet being precisely the same in both, while the devices of the nugamoons, or medicine, wabino, hunting, and war songs, are known solely to the initiates who have learned them, and who always pay high to the native professors for this knowledge.

It must, however, be admitted, as above suggested, that many of the pictographs found are not of the historic or mythologic significance once supposed. For instance, the examination of the rock carvings in several parts of the country has shown that some of them were mere records of the visits of individuals to important springs or to fords on regularly established trails. In this respect there seems to have been, in the intention of the Indians, very much the same spirit as induces the civilized man to record his initials upon objects in the neighborhood of places of general resort. At Oakley Springs, Arizona Territory, totemic marks have been found, evidently made by the same individual at successive visits, showing that on the number of occasions indicated he had passed by those springs, probably camping there, and such record was the habit of the neighboring Indians at that time. The same repetition of totemic names has been found in great numbers in the pipestone quarries of Dakota, and also at some old fords in West Virginia. But these totemic marks are so designed and executed as to have intrinsic significance and value, wholly different in this respect from vulgar names in alphabetic form. It should also be remembered that mere *graffiti* are recognized as of value by the historian, the anthropologist, and the artist.

One very marked peculiarity of the drawings of the Indians is that within each particular system, such as may be called a tribal system, of pictography, every Indian draws in precisely the same manner. The figures of a man, of a horse, and of every other object delineated, are made by every one who attempts to make any such figure with all the identity of which their mechanical skill is capable, thus showing their conception and motive to be the same.

The intention of the present work is not to present at this time a view of the whole subject of pictography, though the writer has been

preparing materials with a reference to that more ambitious project. The paper is limited to the presentation of the most important known pictographs of the North American Indians, with such classification as has been found convenient to the writer, and, for that reason, may be so to collaborators. The scheme of the paper has been to give very simply one or more examples, with illustrations, in connection with each one of the headings or titles of the classifications designated. This plan has involved a considerable amount of cross reference, because, in many cases, a character, or a group of characters, could be considered with reference to a number of noticeable characteristics, and it was a question of choice under which one of the headings it should be presented, involving reference to it from the other divisions of the paper. An amount of space disproportionate to the mere subdivision of Time under the class of Mnemonics, is occupied by the Dakota Winter Counts, but it is not believed that any apology is necessary for their full presentation, as they not only exhibit the device mentioned in reference to their use as calendars, but furnish a repertory for all points connected with the graphic portrayal of ideas.

Attention is invited to the employment of the heraldic scheme of designating colors by lines, dots, etc., in those instances in the illustrations where color appeared to have significance, while it was not practicable to produce the coloration of the originals. In many cases, however, the figures are too minute to permit the successful use of that scheme, and the text must be referred to for explanation.

Thanks are due and rendered for valuable assistance to correspondents and especially to officers of the Bureau of Ethnology and the United States Geological Survey, whose names are generally mentioned in connection with their several contributions. Acknowledgment is also made now and throughout the paper to Dr. W. J. Hoffman who has officially assisted the present writer during several years by researches in the field, and by drawing nearly all the illustrations presented.

DISTRIBUTION OF PETROGLYPHS IN NORTH AMERICA.

Etchings or paintings on rocks in North America are distributed generally.

They are found throughout the extent of the continent, on bowlders formed by the sea waves or polished by ice of the glacial epoch; on the faces of rock ledges adjoining streams; on the high walls of cañons and cliffs; on the sides and roofs of caves; in short, wherever smooth surfaces of rock appear. Drawings have also been discovered on stones deposited in mounds and caves. Yet while these records are so frequent, there are localities to be distinguished in which they are especially abundant and noticeable. Also they differ markedly in character of execution and apparent subject-matter.

An obvious division can be made between characters etched or pecked and those painted without incision. This division in execution coincides to a certain extent with geographic areas. So far as ascertained, painted characters prevail perhaps exclusively throughout Southern California, west and southwest of the Sierra Nevada. Pictures, either painted or incised, are found in perhaps equal frequency in the area extending eastward from the Colorado River to Georgia, northward into West Virginia, and in general along the course of the Mississippi River. In some cases the glyphs are both incised and painted. The remaining parts of the United States show rock-etchings almost exclusive of paintings.

It is proposed with with the accumulation of information to portray the localities of these records upon a chart accompanied by a full descriptive text. In such chart will be designated their relative frequency, size, height, position, color, age, and other particulars regarded as important. With such chart and list the classification and determination now merely indicated may become thorough.

In the present paper a few only of the more important localities will be mentioned; generally those which are referred to under several appropriate heads in various parts of the paper. Notices of some of these have been published; but many of them are publicly mentioned for the first time in this paper, knowledge respecting them having been obtained by the personal researches of the officers of the Bureau of Ethnology, or by their correspondents.

NORTHEASTERN ROCK CARVINGS.

A large number of known and described pictographs on rocks occur in that portion of the United States and Canada at one time in the possession of the several tribes constituting the Algonkian linguistic stock.

This is particularly noticeable throughout the country of the great lakes, and the Northern, Middle, and New England States.

The voluminous discussion upon the Dighton Rock, Massachusetts, inscription, renders it impossible wholly to neglect it.

The following description, taken from Schoolcraft's History, Condition, and Prospect of the Indian Tribes of the United States, Vol. IV, p. 119, which is accompanied with a plate, is, however, sufficient. It is merely a type of Algonkin rock-carving, not so interesting as many others:

> The ancient inscription on a bowlder of greenstone rock lying in the margin of the Assonet, or Taunton River, in the area of ancient Vinland, was noticed by the New England colonists so early as 1680, when Dr. Danforth made a drawing of it. This outline, together with several subsequent copies of it, at different eras, reaching to 1830, all differing considerably in their details, but preserving a certain general resemblance, is presented in the Antiquatés Americanes [*sic*] (Tab. XI, XII) and referred to the same era of Scandinavian discovery. The imperfections of the drawings (including that executed under the auspices of the Rhode Island Historical Society, in 1830, Tab. XII) and the recognition of some characters bearing more or less resemblance to antique Roman letters and figures, may be considered to have misled Mr. Magnusen in his interpretation of it. From whatever cause, nothing could, it would seem, have been wider from the purport and true interpretation of it. It is of purely Indian origin, and is executed in the peculiar symbolic character of the Kekeewin.

ROCK CARVINGS IN PENNSYLVANIA.

Many of the rocks along the river courses in Northern and Western Pennsylvania bear traces of carvings, though, on account of the character of the geological formations, some of these records are almost, if not entirely, obliterated.

Mr. P. W. Shafer published in a historical map of Pennsylvania, in 1875, several groups of pictographs. (They had before appeared in a rude and crowded form in the Transactions of the Anthropological Institute of New York, N. Y., 1871–'72, p. 66, Figs. 25, 26, where the localities are mentioned as "Big" and "Little" Indian Rocks, respectively.) One of these is situated on the Susquehanna River, below the dam at Safe Harbor, and clearly shows its Algonkin origin. The characters are nearly all either animals or various forms of the human body. Birds, bird-tracks, and serpents also occur. A part of this pictograph is pre sented below, Figure 149, page 226.

On the same chart a group of pictures is also given, copied from the originals on the Allegheny River, in Venango County, 5 miles south of Franklin. There are but six characters furnished in this instance, three of which are variations of the human form, while the others are undetermined.

Mr. J. Sutton Wall, of Monongahela City, describes in correspondence a rock bearing pictographs opposite the town of Millsborough, in Fayette

County, Pennsylvania. This rock is about 390 feet above the level of Monongahela River, and belongs to the Waynesburg stratum of sandstone. It is detached, and rests somewhat below its true horizon. It is about 6 feet in thickness, and has vertical sides; only two figures are carved on the sides, the inscriptions being on the top, and are now considerably worn. Mr. Wall mentions the outlines of animals and some other figures, formed by grooves or channels cut from an inch to a mere trace in depth. No indications of tool marks were discovered. It is presented below as Figure 147, page 224.

The resemblance between this record and the drawings on Dighton Rock is to be noted, as well as that between both of them and some in Ohio.

Mr. J. Sutton Wall also contributes a group of etchings on what is known as the "Geneva Picture Rock," in the Monongahela Valley, near Geneva. These are foot-prints and other characters similar to those mentioned from Hamilton Farm, West Virginia, which are shown in Figure 148, page 225.

Schoolcraft (Vol. IV, pp. 172, 173, Pll. 17, 18), describes also, presenting plates, a pictograph on the Allegheny River as follows:

> One of the most often noticed of these inscriptions exists on the left bank of this river [the Allegheny], about six miles below Franklin (the ancient Venango), Pennsylvania. It is a prominent point of rocks, around which the river deflects, rendering this point a very conspicuous object. * The rock, which has been lodged here in some geological convulsion, is a species of hard standstone, about twenty-two feet in length by fourteen in breadth. It has an inclination to the horizon of about fifty degrees. During freshets it is nearly overflown. The inscription is made upon the inclined face of the rock. The present inhabitants in the country call it the 'Indian God.' It is only in low stages of water that it can be examined. Captain Eastman has succeeded, by wading into the water, in making a perfect copy of this ancient record, rejecting from its borders the interpolations of modern names put there by boatmen, to whom it is known as a point of landing. The inscription itself appears distinctly to record, in symbols, the triumphs in hunting and war.

ROCK CARVINGS IN OHIO.

In the Final Report of the Ohio State Board of Centennial Managers, Columbus, 1877, many localities showing rock carvings are noted. The most important (besides those mentioned below) are as follows: Newark, Licking County, where human hands, many varieties of bird tracks, and a cross are noticed. Independence, Cuyahoga County, showing human hands and feet and serpents. Amherst, Lorain County, presenting similar objects. Wellsville, Columbiana County, where the characters are more elaborate and varied.

Mr. James W. Ward describes in the Journal of the Anthropological Institute of New York, Vol. I, 1871–'72, pp. 57–64, Figs. 14–22, some sculptured rocks. They are reported as occurring near Barnesville, Belmont County, and consist chiefly of the tracks of birds and animals. Serpentine forms also occur, together with concentric rings. The au-

thor also quotes Mr. William A. Adams as describing, in a letter to Professor Silliman in 1842, some figures on the surface of a sandstone rock, lying on the bank of the Muskingum River. These figures are mentioned as being engraved in the rock and consist of tracks of the turkey, and of man.

ROCK CARVINGS IN WEST VIRGINIA.

Mr. P. W. Norris, of the Bureau of Ethnology, reports that he found numerous localities along the Kanawha River, West Virginia, bearing pictographs. Rock etchings are numerous upon smooth rocks, covered during high water, at the prominent fords of the river, as well as in the niches or long shallow caves high in the rocky cliffs of this region. Although rude representations of men, animals, and some deemed symbolic characters were found, none were observed superior to, or essentially differing from, those of modern Indians.

Mr. John Haywood mentions (The Natural and Aboriginal History of Tennessee, Nashville, 1823, pp. 332, 333) rock etchings four miles below the Burning Spring, near the mouth of Campbell's Creek, Kanawha County, West Virginia, These consist of forms of various animals, as the deer, buffalo, fox, hare; of fish of various kinds; "infants scalped and scalps alone," and men of natural size. The rock is said to be in the Kanawha River, near its northern shore, accessible only at low water, and then only by boat.

On the rocky walls of Little Coal River, near the mouth of Big Horse Creek, are cliffs upon which are many carvings. One of these measures 8 feet in length and 5 feet in height, and consists of a dense mass of characters.

About 2 miles above Mount Pleasant, Mason County, West Virginia, on the north side of the Kanawha River, are numbers of characters, apparently totemic. These are at the foot of the hills flanking the river.

On the cliffs near the mouth of the Kanawha River, opposite Mount Carbon, Nicholas County, West Virginia, are numerous pictographs. These appear to be cut into the sandstone rock.

See also page 225, Figure 148.

ROCK CARVINGS IN THE SOUTHERN STATES.

Charles C. Jones, jr., in his Antiquities of the Southern Indians, etc., New York, 1873, pp. 62, 63, gives some general remarks upon the pictographs of the southern Indians, as follows:

In painting and rock writing the efforts of the Southern Indians were confined to the fanciful and profuse ornamentation of their own persons with various colors, in

which red, yellow, and black predominated, and to marks, signs, and figures depicted on skins and scratched on wood, the shoulder blade of a buffalo, or on stone. The smooth bark of a standing tree or the face of a rock was used to commemorate some feat of arms, to indicate the direction and strength of a military expedition, or the solemnization of a treaty of peace. High up the perpendicular sides of mountain gorges, and at points apparently inaccessible save to the fowls of the air, are seen representations of the sun and moon, accompanied by rude characters, the significance of which is frequently unknown to the present observer. The motive which incited to the execution of work so perilous was, doubtless, religious in its character, and directly connected with the worship of the sun and his pale consort of the night.

The same author, page 377, particularly describes and illustrates one in Georgia, as follows:

In Forsyth County, Georgia, is a carved or incised bowlder of fine-grained granite, about 9 feet long, 4 feet 6 inches high, and 3 feet broad at its widest point. The figures are cut in the bowlder from one-half to three-fourths ofan inch deep. * It is generally believed that they are the work of the Cherokees.

These figures are chiefly circles, both plain, nucleated, and concentric, sometimes two or more being joined by straight lines, forming what is now known as the "spectacle-shaped" figure.

Dr. M. F. Stephenson mentions, in Geology and Mineralogy of Georgia, Atlanta, 1871, p. 199, sculptures of human feet, various animals, bear tracks, etc., in Enchanted Mountain, Union County, Georgia. The whole number of etchings is reported as one hundred and forty-six.

ROCK CARVINGS IN IOWA.

Mr. P. W. Norris found numerous caves on the banks of the Mississippi River, in Northeastern Iowa, 4 miles south of New Albion, containing incised pictographs. Fifteen miles south of this locality paintings occur on the cliffs.

ROCK CARVINGS IN MINNESOTA.

Mr. P. W. Norris has discovered large numbers of pecked totemic characters on the horizontal face of the ledges of rock at Pipe Stone Quarry, Minnesota, of which he has presented copies. The custom prevailed, it is stated, for each Indian who gathered stone (Catlinite) for pipes to inscribe his totem upon the rock before venturing to quarry upon this ground. Some of the cliffs in the immediate vicinity were of too hard a nature to admit of pecking or scratching, and upon these the characters were placed in colors.

ROCK CARVINGS IN WYOMING AND IN IDAHO.

A number of pictographs in Wyoming are described in the report on Northwestern Wyoming, including Yellowstone National Park, by Capt. William A. Jones, U. S. A., Washington, 1875, p. 268 *et seq.*, Figures 50 to 53 in that work. The last three in order of these figures are reproduced in Sign Language among North American Indians, in the First Annual Report, Bureau of Ethnology, pages 378 and 379, to show their connection with gesture signs. The most important one was discovered on Little Popo-Agie, Northwestern Wyoming, by members of Captain Jones's party in 1873. The etchings are upon a nearly vertical wall of the yellow sandstone in the rear of Murphy's ranch, and appear to be of some antiquity.

Further remarks, with specimens of the figures, are presented in this paper as Figure 150, on page 227.

Dr. William H. Corbusier, U. S. Army, in a letter to the writer, mentions the discovery of rock etchings on a sandstone rock near the headwaters of Sage Creek, in the vicinity of Fort Washakie, Wyoming. Dr. Corbusier remarks that neither the Shoshoni nor the Arapaho Indians know who made the etchings. The two chief figures appear to be those of the human form, with the hands and arms partly uplifted, the whole being surrounded above and on either side by an irregular line.

The method of grouping, together with various accompanying appendages, as irregular lines, spirals, etc., observed in Dr. Corbusier's drawing, show great similarity to the Algonkin type, and resemble some etchings found near the Wind River Mountains, which were the work of Blackfeet (Satsika) Indians, who, in comparatively recent times, occupied portions of the country in question, and probably also etched the designs near Fort Washakie.

A number of examples from Idaho appear *infra*, pages 228 and 229.

ROCK CARVINGS IN NEVADA.

At the lower extremity of Pyramid Lake, Nevada, pictographs have been found by members of the United States Geological Survey, though no accurate reproductions are available. These characters are mentioned as incised upon the surface of basalt rocks.

On the western slope of Lone Butte, in the Carson Desert, Nevada, pictographs occur in considerable numbers. All of these appear to have been produced, on the faces of bowlders and rocks, by pecking and scratching with some hard mineral material like quartz. No copies have been obtained as yet.

Great numbers of incised characters of various kinds are found on the walls of rock flanking Walker River, near Walker Lake, Nevada.

Waving lines, rings, and what appear to be vegetable forms are of frequent occurrence. The human form and footprints are also depicted.

Among the copies of pictographs obtained in various portions of the Northwestern States and Territories, by Mr. G. K. Gilbert, is one referred as to as being on a block of basalt at Reveillé, Nevada, and is mentioned as being Shinumo or Moki. This suggestion is evidently based upon the general resemblance to drawings found in Arizona, and known to have been made by the Moki Indians. The locality is within the territory of the Shoshonian linguistic division, and the etchings are in all probability the work of one or more of the numerous tribes comprised within that division.

ROCK CARVINGS IN OREGON AND IN WASHINGTON.

Numerous bowlders and rock escarpments at and near the Dalles of the Columbia River, Oregon, are covered with incised or pecked pictographs. Human figures occur, though characters of other forms predominate.

Mr. Albert S. Gatschet reports the discovery of rock etchings near Gaston, Oregon, in 1878, which are said to be near the ancient settlement of the Tuálati (or Atfálati) Indians, according to the statement of these people. These etchings are about 100 feet above the valley bottom, and occur on six rocks of soft sandstone, projecting from the grassy hillside of Patten's Valley, opposite Darling Smith's farm, and are surrounded with timber on two sides. The distance from Gaston is about 4 miles; from the old Tuálati settlement probably not more than $2\frac{1}{2}$ miles in an air-line.

This sandstone ledge extends for one-eighth of a mile horizontally along the hillside, upon the projecting portions of which the inscriptions are found. These rocks differ greatly in size, and slant forward so that the inscribed portions are exposed to the frequent rains of that region. The first rock, or that one nearest the mouth of the cañon, consists of horizontal zigzag lines, and a detached straight line, also horizontal. On another side of the same rock is a series of oblique parallel lines. Some of the most striking characters found upon other exposed portions of the rock appear to be human figures, *i. e.*, circles to which radiating lines are attached, and bearing indications of eyes and mouth, long vertical lines running downward as if to represent the body, and terminating in a bifurcation, as if intended for legs, toes, etc. To the right of one figure is an arm and three-fingered hand (similar to some of the Moki characters), bent downward from the elbow, the humerus extending at a right angle from the body. Horizontal rows of short vertical lines are placed below and between some of the figures, probably numerical marks of some kind.

Other characters occur of various forms, the most striking being an

arrow pointing upward, with two horizontal lines drawn across the shaft, vertical lines having short oblique lines attached thereto.

Mr. Gatschet, furthermore, remarks that the Tuálati attach a trivial story to the origin of these pictures, the substance of which is as follows: The Tillamuk warriors living on the Pacific coast were often at variance with the several Kalapuya tribes. One day, passing through Patten's Valley to invade the country of the Tuálati, they inquired of a passing woman how far they were from their camp. The woman, desirous not to betray her own countrymen, said that they were yet at a distance of one (or two?) days' travel. This made them reflect over the intended invasion, and holding a council they preferred to retire. In commemoration of this the inscription with its numeration marks, was incised by the Tuálati.

Capt. Charles Bendire, U. S. Army, states in a letter that Col. Henry C. Merriam, U. S Army, discovered pictographs on a perpendicular cliff of granite at the lower end of Lake Chelan, lat. 48° N., near old Fort O'Kinakane, on the upper Columbia River. The etchings appear to have been made at widely different periods, and are evidently quite old. Those which appeared the earliest were from twenty-five to thirty feet above the present water level. Those appearing more recent are about ten feet above water level. The figures are in black and red colors, representing Indians with bows and arrows, elk, deer, bear, beaver, and fish. There are four or five rows of these figures, and quite a number in each row. The present native inhabitants know nothing whatever regarding the history of these paintings.

For another example of pictographs from Washington see Figure 109, p. 190.

ROCK CARVINGS IN UTAH.

A locality in the southern interior of Utah has been called Pictograph Rocks, on account of the numerous records of that character found there.

Mr. G. K. Gilbert, of the United States Geological Survey, in 1875 collected a number of copies of inscriptions in Temple Creek Cañon, Southeastern Utah, accompanied by the following notes: "The drawings were found only on the northeast wall of the cañon, where it cuts the Vermillion cliff sandstone. The chief part are etched, apparently by pounding with a sharp point. The outline of a figure is usually more deeply cut than the body. Other marks are produced by rubbing or scraping, and still other by laying on colors. Some, not all, of the colors are accompanied by a rubbed appearance, as though the material had been a dry chalk.

"I could discover no tools at the foot of the wall, only fragments of pottery, flints, and a metate.

"Several fallen blocks of sandstone have rubbed depressions that may have been ground out in the sharpening of tools. There have been many dates of inscriptions, and each new generation has unscrupulously run its lines over the pictures already made. Upon the best protected surfaces, as well as the most exposed, there are drawings dimmed beyond restoration and others distinct. The period during which the work accumulated was longer by far than the time which has passed since the last. Some fallen blocks cover etchings on the wall, and are themselves etched.

"Colors are preserved only where there is almost complete shelter from rain. In two places the holes worn in the rock by swaying branches impinge on etchings, but the trees themselves have disappeared. Some etchings are left high and dry by a diminishing talus (15–20 feet), but I saw none partly buried by an increasing talus (except in the case of the fallen block already mentioned).

"The painted circles are exceedingly accurate, and it seems incredible that they were made without the use of a radius."

In the collection contributed by Mr. Gilbert there are at least fifteen series or groups of figures, most of which consist of the human form (from the simplest to the most complex style of drawing), animals, either singly or in long files, as if driven, bird tracks, human feet and hands, etc. There are also circles, parallel lines, and waving or undulating lines, spots, and other unintelligible characters.

Mr. Gilbert also reports the discovery, in 1883, of a great number of pictographs, chiefly in color, though some are etched, in a cañon of the Book Cliff, containing Thompson's spring, about 4 miles north of Thompson's station, on the Denver and Colorado Railroad, Utah.

Collections of drawings of pictographs at Black Rock spring, on Beaver Creek, north of Milford, Utah, have been furnished by Mr. Gilbert. A number of fallen blocks of basalt, at a low escarpment, are filled with etchings upon the vertical faces. The characters are generally of an "unintelligible" nature, though the human figure is drawn in complex forms. Foot-prints, circles, etc., also abound.

Mr. I. C. Russell, of the United States Geological Survey, furnished rude drawings of pictographs at Black Rock spring, Utah (see Figure 153). Mr. Gilbert Thompson, of the United States Geological Survey, also discovered pictographs at Fool Creek Cañon, Utah (see Figure 154). Both of those figures are on page 230.

ROCK CARVINGS IN COLORADO.

Captain E. L. Berthoud furnished to the Kansas City Review of Science and Industry, VII, 1883, No. 8, pp. 489, 490, the following:

The place is 20 miles southeast of Rio Del Norte, at the entrance of the cañon of the Piedra Pintada (Painted Rock) Creek. The carvings are found on the right of the

cañon, or valley, and upon volcanic rocks. They bear the marks of age and are cut in, not painted, as is still done by the Utes everywhere. They are found for a quarter of a mile along the north wall of the cañon, on the ranches of W. M. Maguire and F. T. Hudson, and consist of all manner of pictures, symbols, and hieroglyphics done by artists whose memory even tradition does not now preserve. The fact that these are carvings, done upon such hard rock merits them with additional interest, as they are quite distinct from the carvings I saw in New Mexico and Arizona on soft sand-stone. Though some of them are evidently of much greater antiquity than others, yet all are ancient, the Utes admitting them to have been old when their fathers conquered the country.

ROCK CARVINGS IN NEW MEXICO.

On the north wall of Cañon de Chelly, one fourth of a mile east of the mouth of the cañon, are several groups of pictographs, consisting chiefly of various grotesque forms of the human figure, and also numbers of animals, circles, etc. A few of them are painted black, the greater portion consisting of rather shallow lines which are in some places considerably weathered.

Further up the cañon, in the vicinity of cliff-dwellings, are numerous small groups of pictographic characters, consisting of men and animals, waving or zigzag lines, and other odd and "unintelligible" figures.

Lieut. J. H. Simpson gives several illustrations of pictographs copied from rocks in the northwest part of New Mexico in his Report of an Expedition into the Navajo Country. (Sen. Ex. Doc. No. 64, 31st Cong., 1st sess., 1856, Pl. 23, 24, 25.)

Inscriptions have been mentioned as occurring at El Moro, consisting of etchings of human figures and other unintelligible characters. This locality is better known as Inscription Rock. Lieutenant Simpson's remarks upon it, with illustrations, are given in the work last cited, on page 120. He states that most of the characters are no higher than a man's head, and that some of them are undoubtedly of Indian origin.

At Arch Spring, near Zuñi, figures are cut upon a rock which Lieutenant Whipple thinks present some faint similarity to those at Rocky Dell Creek. (Rep. Pac. R. R. Exped., Vol. III, 1856, Pt. III, p. 39, Pl. 32.)

Near Ojo Pescado, in the vicinity of the ruins, are pictographs, reported in the last mentioned volume and page, Plate 31, which are very much weather-worn, and have "no trace of a modern hand about them."

ROCK-CARVINGS IN ARIZONA.

On a table land near the Gila Bend is a mound of granite bowlders, blackened by augite, and covered with unknown characters, the work of human hands. On the ground near by were also traces of some of

the figures, showing some of the pictographs, at least, to have been the work of modern Indians. Others were of undoubted antiquity, and the signs and symbols intended, doubtless, to commemorate some great event. (See Ex. Doc. No. 41, 30th Cong., 1st sess. (Emory's Reconnaissance), 1848, p. 89; Ill. opposite p. 89, and on p. 90.)

Characters upon rocks, of questionable antiquity, are reported in the last-mentioned volume, Plate, p. 63, to occur on the Gila River, at 32° 38′ 13″ N. lat., and 109° 07′ 30″ long. [According to the plate, the figures are found upon bowlders and on the face of the cliff to the height of about 30 feet.]

The party under Lieutenant Whipple (see Rep. Pac. R. R. Exped., III, 1856, Pt. III, p. 42) also discovered pictographs at Yampais Spring, Williams River. "The spot is a secluded glen among the mountains. A high shelving rock forms a cave, within which is a pool of water and a crystal stream flowing from it. The lower surface of the rock is covered with pictographs. None of the devices seem to be of recent date."

Many of the country rocks lying on the Colorado plateau of Northern Arizona, east of Peach Springs, bear traces of considerable artistic workmanship. Some observed by Dr. W. J. Hoffman, in 1871, were rather elaborate and represented figures of the sun, human beings in various styles approaching the grotesque, and other characters not yet understood. All of those observed were made by pecking the surface of basalt with a harder variety of stone.

Mr. G. K. Gilbert discovered etchings at Oakley Spring, eastern Arizona, in 1878, relative to which he remarks that an Oraibi chief explained them to him and said that the "Mokis make excursions to a locality in the cañon of the Colorado Chiquito to get salt. On their return they stop at Oakley Spring and each Indian makes a picture on the rock. Each Indian draws his crest or totem, the symbol of his gens [(?)]. He draws it once, and once only, at each visit." Mr. Gilbert adds, further, that "there are probably some exceptions to this, but the etchings show its general truth. There are a great many repetitions of the same sign, and from two to ten will often appear in a row. In several instances I saw the end drawings of a row quite fresh while the others were not so. Much of the work seems to have been performed by pounding with a hard point, but a few pictures are scratched on. Many drawings are weather-worn beyond recognition, and others are so fresh that the dust left by the tool has not been washed away by rain. Oakley Spring is at the base of the Vermilion Cliff, and the etchings are on fallen blocks of sandstone, a homogeneous, massive, soft sandstone. Tubi, the Oraibi chief above referred to, says his totem is the rain cloud but it will be made no more as he is the last survivor of the gens."

A group of the Oakley Spring etchings of which Figure 1 is a copy, measures six feet in length and four feet in height. Interpreta-

tions of many of the separated characters of Figure 1 are presented on page 46 *et seq.*, also in Figures 156 *et seq.*, page 237.

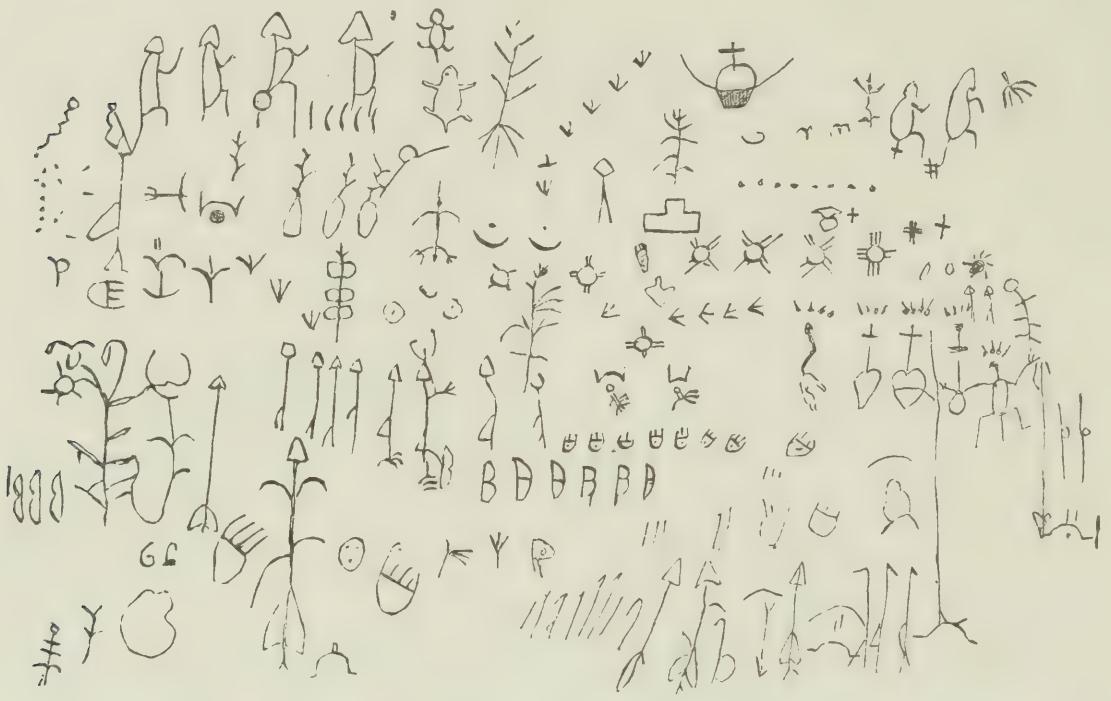


FIG. 1.—Petroglyphs at Oakley Springs, Arizona.

Mr. Gilbert obtained sketches of etchings in November, 1878, on Partridge Creek, northern Arizona, at the point where the Beale wagon road comes to it from the east. "The rock is cross-laminated Aubrey sandstone and the surfaces used are faces of the laminæ. All the work is done by blows with a sharp point. (Obsidian is abundant in the vicinity.) Some inscriptions are so fresh as to indicate that the locality is still resorted to. No Indians live in the immediate vicinity, but the region is a hunting ground of the Wallapais and Avasupais (Cosninos)."

Notwithstanding the occasional visits of the above named tribes, the characters submitted more nearly resemble those of other localities known to have been made by the Moki Pueblos.

Rock etchings are of frequent occurrence along the entire extent of the valley of the Rio Verde, from a short distance below Camp Verde to the Gila River.

Mr. Thomas V. Keam reports etchings on the rocks in Cañon Segy, and in Keam's Cañon, northeastern Arizona. Some forms occurring at the latter locality are found also upon Moki pottery.

ROCK CARVINGS IN CALIFORNIA.

From information received from Mr. Alphonse Pinart, pictographic records exist in the hills east of San Bernardino, somewhat resembling

those at Tule River in the southern spurs of the Sierra Nevada, Kern County.

These pictographic records are found at various localities along the hill tops, but to what distance is not positively known.

In the range of mountains forming the northeastern boundary of Owen Valley are extensive groups of petroglyphs, apparently dissimilar to those found west of the Sierra Nevada. Dr. Oscar Loew also mentions a singular inscription on basaltic rocks in Black Lake Valley, about 4 miles southwest of the town of Benton, Mono County. This is scratched in the basalt surface with some sharp instrument and is evidently of great age. (Ann. Report upon the Geog. Surveys west of the 100th meridian. Being Appendix J J, Ann. Report of Chief of Engineers for 1876. Plate facing p. 326.)

Dr. W. J. Hoffman, of the Bureau of Ethnology, reports the occurrence of a number of series of etchings scattered at intervals for over twenty miles in Owen's Valley, California. Some of these records were hastily examined by him in 1871, but it was not until the autumn of 1884 that a thorough examination of them was made, when measurements, drawings, etc., were obtained for study and comparison. The country is generally of a sandy, desert, character, devoid of vegetation and water. The occasional bowlders and croppings of rock consist of vesicular basalt, upon the smooth vertical faces of which occur innumerable characters different from any hitherto reported from California, but bearing marked similarity to some figures found in the country now occupied by the Moki and Zuñi, in New Mexico and Arizona, respectively.

The southernmost group of etchings is eighteen miles south of the town of Benton; the next group, two miles almost due north, at the Chalk Grade; the third, about three miles farther north, near the stage road; the fourth, half a mile north of the preceding; then a fifth, five and a half miles above the last named and twelve and a half miles south of Benton. The northernmost group is about ten or twelve miles northwest of the last-mentioned locality and southwest from Benton, at a place known as Watterson's Ranch. The principal figures consist of various simple, complex, and ornamental circles, some of the simple circles varying as nucleated, concentric, and spectacle-shaped, zigzag, and serpentine lines, etc. Animal forms are not abundant, those readily identified being those of the deer, antelope, and jack-rabbits. Representations of snakes and huge sculpturings of grizzly-bear tracks occur on one horizontal surface, twelve and a half miles south of Benton. In connection with the latter, several carvings of human foot-prints appear, leading in the same direction, *i. e.*, toward the south-southwest.

All of these figures are pecked into the vertical faces of the rocks, the depths varying from one-fourth of an inch to an inch and a quarter. A freshly broken surface of the rock presents various shades from a cream white to a Naples yellow color, though the sculptured lines are all blackened by exposure and oxidation of the iron contained therein. This fact has no importance toward the determination of the age of the work.

At the Chalk Grade is a large bowlder measuring about six feet in height and four feet either way in thickness, upon one side of which is one-half of what appears to have been an immense mortar. The sides of this cavity are vertical, and near the bottom turn abruptly and horizontally in toward the center, which is marked by a cone about three inches high and six inches across at its base. The interior diameter of the mortar is about twenty-four inches, and from the appearance of the surface, being considerably grooved laterally, it would appear as if a core had been used for grinding, similar in action to that of a millstone. No traces of such a core or corresponding f rm were visible. This instance is mentioned as it is the only indication that the authors of the etchings made any prolonged visit to this region, and perhaps only for grinding grass seed, though neither grass nor water is now found nearer than the remains at Watterson's Ranch and at Benton.

The records at Watterson's are pecked upon the surfaces of detached bowlders near the top of a mesa, about one hundred feet above the nearest spring, distant two hundred yards. These are also placed at the southeast corner of the mesa, or that nearest to the northern most of the main group across the Benton Range. At the base of the eastern and northeastern portion of this elevation of land, and but a stone's throw from the etchings, are the remains of former camps, such as stone circles, marking the former sites of brush lodges, and a large number of obsidian flakes, arrowheads, knives, and some jasper remains of like character. Upon the flat granite bowlders are several mortar-holes, which perhaps were used for crushing the seed of the grass still growing abundantly in the immediate vicinity. Piñon nuts are also abundant in this locality.

Upon following the most convenient course across the Benton Range to reach Owen's Valley proper, etchings are also found, though in limited numbers, and seem to partake of the character of "indicators as to course of travel." By this trail the northernmost of the several groups of etchings above mentioned is the nearest and most easily reached.

The etchings upon the bowlders at Watterson's are somewhat different from those found elsewhere. The number of specific designs is limited, many of them being reproduced from two to six or seven times, thus seeming to partake of the character of personal names.

One of the most frequent is that resembling a horseshoe within which is a vertical stroke. Sometimes the upper extremity of such stroke is attached to the upper inside curve of the broken ring, and frequently there are two or more parallel vertical strokes within one such curve. Bear-tracks and the outline of human feet also occur, besides several unique forms. A few of these forms are figured, though not accurately, in the Ann. Report upon the Geog. Surveys west of the 100th meridian last mentioned (1876), Plate facing p. 326.

Lieutenant Whipple reports (Rep. Pac. R.R. Exped. III, 1856, Pt. III,

p. 42, Pl. 36) the discovery of pictographs at Pai-Ute Creek, about 30 miles west of the Mojave villages. These are carved upon a rock, "are numerous, appear old, and are too confusedly obscure to be easily traceable."

These bear great general resemblance to etchings scattered over Northeast Arizona, Southern Utah, and Western New Mexico.

Remarkable pictographs have also been found at Tule River Agency. See Figure 155, page 235.

COLORED PICTOGRAPHS ON ROCKS.

Mr. Gilbert Thompson reports the occurrence of painted characters at Paint Lick Mountain, 3 miles north of Maiden Spring, Tazewell County, Virginia. These characters are painted in red, blue, and yellow. A brief description of this record is given in a work by Mr. Charles B. Coale, entitled "The Life and Adventures of Wilburn Waters," etc., Richmond, 1878, p. 136.

Mr. John Haywood (The Natural and Aboriginal History of Tennessee, Nashville, 1823, p. 149) mentions painted figures of the sun, moon, a man, birds, etc., on the bluffs on the south bank of the Holston, 5 miles above the mouth of the French Broad. These are painted in red colors on a limestone bluff. He states that they were attributed to the Cherokee Indians, who made this a resting place when journeying through the region. This author furthermore remarks: "Wherever on the rivers of Tennessee are perpendicular bluffs on the sides, and especially if caves be near, are often found mounds near them, enclosed in intrenchments, with the sun and moon painted on the rocks," etc.

Among the many colored etchings and paintings on rock discovered by the Pacific Railroad Expedition in 1853–'54 (Rep. Pac. R. R. Exped., III, 1856, Pt. III, pp. 36, 37, Pll. 28, 29, 30) may be mentioned those at Rocky Dell Creek, New Mexico, which were found between the edge of the Llano Estacado and the Canadian River. The stream flows through a gorge, upon one side of which a shelving sandstone rock forms a sort of cave. The roof is covered with paintings, some evidently ancient, and beneath are innumerable carvings of footprints, animals, and symmetrical lines.

Mr. James H. Blodgett, of the U. S. Geological Survey, calls attention to the paintings on the rocks of the bluffs of the Mississippi River, a short distance below the mouth of the Illinois River, in Illinois, which were observed by early French explorers, and have been the subject of discussion by much more recent observers.

Mr. P. W. Norris found numerous painted totemic characters upon the cliffs in the immediate vicinity of the pipestone quarry, Minnesota. These consisted, probably, of the totems or names of Indians who had

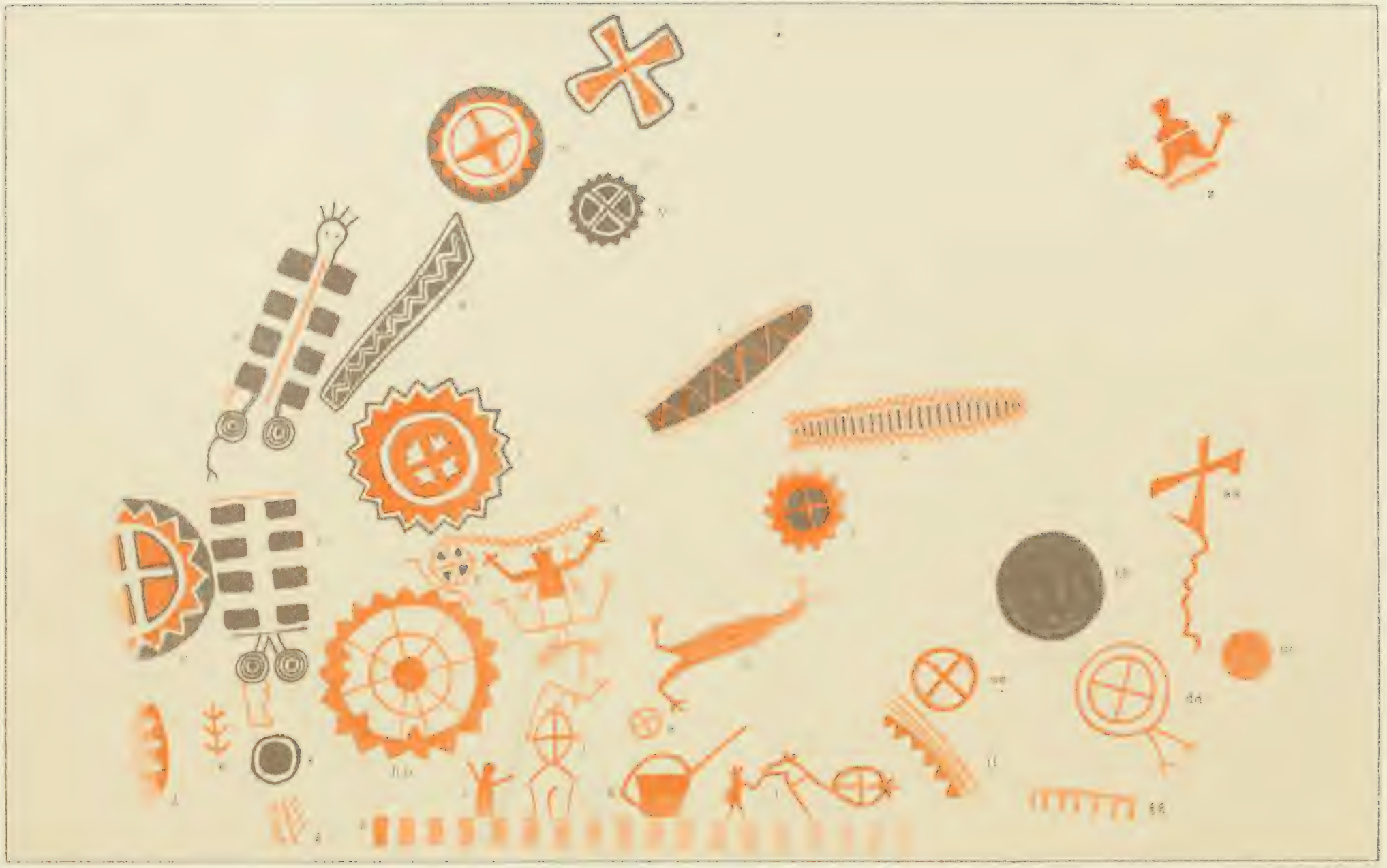
visited that locality for the purpose of obtaining catlinite for making pipes. These had been mentioned by early writers.

Mr. Norris also discovered painted characters upon the cliffs on the Mississippi River, 19 miles below New Albin, in northeastern Iowa.

Mr. Gilbert Thompson reports his observation of pictographs at San Antonio Springs, 30 miles east of Fort Wingate, New Mexico. The human form, in various styles, occurs, as well as numerous other characters strikingly similar to those frequent in the country, farther west, occupied by the Moki Indians. The peculiarity of these figures is that the outlines are incised or etched, the depressions thus formed being filled with pigments of either red, blue, or white. The interior portions of the figures are simply painted with one or more of the same colors.

Charles D. Wright, esq., of Durango, Colorado, writes that he has discovered "hieroglyphical writings" upon rocks and upon the wall of a cliff house near the Colorado and New Mexico boundary line. On the wall in one small building was found a series of characters in red and black paints, consisting of a "chief on his horse, armed with spear and lance, wearing a pointed hat and robe; behind this were about twenty characters representing people on horses, lassoing horses, etc.; in fact, the whole scene represented breaking camp and leaving in a hurry. The whole painting measured about 12 by 16 feet." Other rock-paintings are also mentioned as occurring near the San Juan River, consisting of four characters representing men as if in the act of taking an obligation, hands extended, etc. At the right are some characters in black paint, covering a space 3 by 4 feet.

The rock paintings presented in Plates I and II are reduced copies of a record found by Dr. W. J. Hoffman, of the Bureau of Ethnology, in September, 1884, 12 miles west-northwest of the city of Santa Barbara, California. They are one-sixteenth original size. The locality is almost at the summit of the Santa Ynez range of mountains; the gray sandstone rock on which they are painted is about 30 feet high and projects from a ridge so as to form a very marked promontory extending into a narrow mountain cañon. At the base of the western side of this bowlder is a rounded cavity, measuring, on the inside, about 15 feet in width and 8 feet in height. The floor ascends rapidly toward the back of the cave, and the entrance is rather smaller in dimensions than the above measurements of the interior. About 40 yards west of this rock is a fine spring of water. One of the four old Indian trails leading northward across the mountains passes by this locality, and it is probable that this was one of the camping-places of the tribe which came south to trade, and that some of its members were the authors of the paintings. The three trails beside the one just mentioned cross the mountains at various points east of this, the most distant being about 15 miles. Other trails were known, but these four were most direct to the immediate vicinity of the Spanish settlement which sprang up shortly after the establishment of the Santa Barbara Mission in 1786. Pictographs (not now described)



PICTOGRAPHS IN SANTA BARBARA COUNTY, CALIFORNIA

appear upon rocks found at or near the origin of all of the above-mentioned trails at the base of the mountains, with the exception of the one under consideration. The appearance and position of these pictographs appear to be connected with the several trails.

The circles figured in *b* and *d* of Plate I, and *c*, *r*, and *w* of Plate II, together with other similar circular marks bearing cross-lines upon the interior, were at first unintelligible, as their forms among various tribes have very different signification. The character in Plate I, above and projecting from *d*, resembles the human form, with curious lateral bands of black and white, alternately. Two similar characters appear, also, in Plate II, *a*, *b*. In *a*, the lines from the head would seem to indicate a superior rank or condition of the person depicted.

Having occasion subsequently to visit the private ethnologic collection of Hon. A. F. Coronel, of Los Angeles, California, Dr. Hoffman discovered a clue to the general import of the above record, as well as the signification of some of the characters above mentioned. In a collection of colored illustrations of Mexican costumes some of them probably a century old, he found blankets bearing borders and colors, nearly identical with those shown in the circles in Plate I, *d*, and Plate II, *c*, *r*, *w*. It is more than probable that the circles represent bales of blankets which early became articles of trade at the Santa Barbara Mission. If this supposition is correct, the cross-lines would seem to represent the cords used in tying the blankets into bales, which same cross-lines appear as cords in *l*, Plate II. Mr. Coronel also possesses small figures of Mexicans, of various conditions of life, costumes, trades, and professions, one of which, a painted statuette, is a representation of a Mexican lying down flat upon an outspread serape, similar in color and form to the black and white bands shown in the upper figure of *d*, Plate I, and *a*, *b*, of Plate II, and instantly suggesting the explanation of those figures. Upon the latter the continuity of the black and white bands is broken, as the human figures are probably intended to be in front, or on top, of the drawings of the blankets.

The small statuette above mentioned is that of a Mexican trader, and if the circles in the pictographs are considered to represent bales of blankets, there is a figure in Plate I, *d*, still more interesting, from the union of one of these circles with that of a character representing the trader, *i. e.*, the man possessing the bales. Bales, or what appear to be bales, are represented to the top and right of the circle *d*, Plate I, and also upon the right hand figure in *l*, Plate II. To the right of the latter are three short lines, evidently showing the knot or ends of the cords used in tying a bale of blankets without colors, therefore of less importance, or of other goods. This bale is upon the back of what appears to be a horse, led in an upward direction by an Indian whose head-dress, and ends of the breech-cloth, are visible. Other human forms appear in the attitude of making gestures, one also in *j*, Plate II, probably carrying a bale of goods. Figure *u* represents a centipede, an insect found

occasionally south of the mountains, but reported as extremely rare in the immediate northern regions. (For *x*, see page 232.)

Mr. Coronel stated that when he first settled in Los Angeles, in 1843, the Indians living north of the San Fernando mountains manufactured blankets of the fur and hair of animals, showing transverse bands of black and white similar to those depicted, which were sold to the inhabitants of the valley of Los Angeles and to Indians who transported them to other tribes.

It is probable that the pictograph is intended to represent the salient features of a trading expedition from the north. The ceiling of the cavity found between the drawings represented in Plate I and Plate II has disappeared, owing to disintegration, thus leaving a blank about 4 feet long, and 6 feet from the top to the bottom of the original record between the parts represented in the two plates.

Dr. W. J. Hoffman also reports the following additional localities in Santa Barbara and Los Angeles counties. Fifteen miles west of Santa Barbara, on the northern summit of the Santa Ynez range, and near the San Marcos Pass, is a group of paintings in red and black. One figure resembles a portion of a checker-board in the arrangement of squares. Serpentine and zigzag lines occur, as also curved lines with serrations on the concave sides: figures of the sun, groups of short vertical lines, and *tree forms*, resembling representations of the dragon-fly, and the human form, as drawn by the Moki Indians, and very similar to Fig. *e*, Pl. II. These paintings are in a cavity near the base of an immense bowlder, over twenty feet in height. A short distance from this is a flat granitic bowlder, containing twenty-one mortar holes, which had evidently been used by visiting Indians during the acorn season. Trees of this genus are very abundant, and their fruit formed one of the sources of subsistence.

Three miles west-northwest of this locality, in the valley near the base of the mountain, are indistinct figures in faded red, painted upon a large rock. The characters appear similar, in general, to those above mentioned.

Forty-three miles west of Santa Barbara, in the Najowe Valley, is a promontory, at the base of which is a large shallow cavern, the opening being smaller than the interior, upon the roof and back of which are numerous figures of similar forms as those observed at San Marcos Pass. Several characters appear to have been drawn at a later date than others, such as horned cattle, etc. The black color used was a manganese compound, while the red pigments consist of ferruginous clays, abundant at numerous localities in the mountain cañons. Some of the human figures are drawn with the hands and arms in the attitude of making the gestures for *surprise* or *astonishment*, and *negation*.

One of the most extensive records, and probably also the most elaborately drawn, is situated in the Carisa Plain, near Señor Oreña's ranch, sixty or seventy miles due north of Santa Barbara. The most conspicu-

ous figure is that of the sun, resembling a face, with ornamental appendages at the cardinal points, and bearing striking resemblance to some Moki marks and pictographic work. Serpentine lines and numerous anomalous forms also abound.

Four miles northeast of Santa Barbara, near the residence of Mr. Stevens, is an isolated sandstone bowlder measuring about twenty feet high and thirty feet in diameter, upon the western side of which is a slight cavity bearing figures corresponding in general form to others in this county. The gesture for *negation* again appears in the attitude of the human figures.

Half a mile farther east, on Dr. Coe's farm, is another smaller bowlder, in a cavity of which some portions of human figures are shown. Parts of the drawings have disappeared through disintegration of the rock, which is called "Pulpit Rock," on account of the shape of the cavity, its position at the side of the narrow valley, and the echo observed upon speaking a little above the ordinary tone of voice.

Painted rocks also occur in the Azuza Cañon, about thirty miles northeast of Los Angeles, of which illustrations are given in Plate LXXX, described on p. 156.

Dr. Hoffman also found other paintings in the valley of the South Fork of the Tule River, in addition to those discovered in 1882, and given in Figure 155, p. 235. The forms are those of large insects, and of the bear, beaver, centipede, bald eagle, etc.

Upon the eastern slope of an isolated peak between Porterville and Visalia, several miles east of the stage road, are pictographs in red and black. These are chiefly drawings of the deer, bear, and other animals and forms not yet determined.

Just previous to his departure from the Santa Barbara region, Dr. Hoffman was informed of the existence of eight or nine painted records in that neighborhood, which up to that time had been observed only by a few sheep-herders and hunters.

Other important localities showing colored etchings, and other painted figures, are at San Diego, California; at Oneida, Idaho; in Temple Creek Cañon, southeastern Utah, and in the Cañon de Chelly, northwestern New Mexico.

FOREIGN PETROGLYPHS.

The distribution and the description of the petroglyphs of Mexico, as well as of other forms of pictographs found there, are omitted in the present paper. The subject is so vast, and such a large amount of information has already been given to the public concerning it, that it is not considered in this work, which is mainly devoted to the similar productions of the tribes popularly known as North American Indians, although the pre-Columbian inhabitants of Mexico should, in strictness, be included in that category. It is, however, always to be recognized that one of the most important points in the study of pictographs, is the comparison of those of Mexico with those found farther north.

Copies of many petroglyphs found in the eastern hemisphere have been collected, but the limitations of the present paper do not allow of their reproduction or discussion.

PETROGLYPHS IN SOUTH AMERICA.

While the scope of this work does not contemplate either showing the distribution of the rock carvings in South America, or entering upon any detailed discussion of them, some account is here subjoined for the purpose of indicating the great extent of the ethnic material of this character that is yet to be obtained from that continent. Alexander von Humboldt, in Aspects of Nature in different lands and different climates, etc., Vol. I, pp. 196–201, London, 1850, gives the following general remarks concerning pictographs from South America:

In the interior of South America, between the 2d and 4th degrees of North latitude, a forest-covered plain is enclosed by four rivers, the Orinoco, the Atabapo, the Rio Negro, and the Cassiquiare. In this district are found rocks of granite and of syenite, covered, like those of Caicara and Uruana, with colossal symbolical figures of crocodiles and tigers, and drawings of household utensils, and of the sun and moon. At the present time this remote corner of the earth is entirely without human inhabitants, throughout an extent of more than 8,000 square geographical miles. The tribes nearest to its boundaries are wandering naked savages, in the lowest stages of human existence, and far removed from any thoughts of carving hieroglyphics on rocks. One may trace in South America an entire zone, extending through more than eight degrees of longitude, of rocks so ornamented; viz. from the Rupuniri, Essequibo, and the mountains of Pacaraima, to the banks of the Orinoco and of the Yupura. These carvings may belong to very different epochs, for Sir Robert Schomburgk even found on the Rio Negro representations of a Spanish galiot, which must have been of a later date than the beginning of the 16th century; and this in a wilderness where

the natives were probably as rude then as at the present time. But it must not be forgotten that * * nations of very different descent, when in a similar uncivilized state, having the same disposition to simplify and generalize outlines, and being impelled by inherent mental dispositions to form rythmical repetitions and series, may be led to produce similar signs and symbols. * * * Some miles from Encaramada, there rises, in the middle of the savannah, the rock Tepu-Mereme, or painted rock. It shews several figures of animals and symbolical outlines which resemble much those observed by us at some distance above Encaramada, near Caycara, in 7° 5′ to 7° 40′ lat., and 66° 28′ to 67° 23′ W. long. from Greenwich. Rocks thus marked are found between the Cassiquiare and the Atabapo (in 2° 5′ to 3° 20′ lat.), and what is particularly remarkable, 560 geographical miles farther to the East in the solitudes of the Parime. This last fact is placed beyond a doubt by the journal of Nicholas Hortsman, of which I have seen a copy in the handwriting of the celebrated D'Anville. That simple and modest traveller wrote down every day, on the spot, what had appeared to him most worthy of notice, and he deserves perhaps the more credence because, being full of dissatisfaction at having failed to discover the objects of his researches, the Lake of Dorado, with lumps of gold and a diamond mine, he looked with a certain degree of contempt on whatever fell in his way. He found, on the 16th of April, 1749, on the banks of the Rupununi, at the spot where the river winding between the Macarana mountains forms several small cascades, and before arriving in the district immediately round Lake Amucu, "rocks covered with figures,"—or, as he says in Portugese, "de varias letras." We were shown at the rock of Culimacari, on the banks of the Cassiquiare, signs which were called characters, arranged in lines—but they were only ill-shaped figures of heavenly bodies, boa-serpents, and the utensils employed in preparing manioc meal. I have never found among these painted rocks (piedras pintadas) any symmetrical arrangement or any regular even-spaced characters. I am therefore disposed to think that the word "letras" in Hortsmann's journal must not be taken in the strictest sense.

Schomburgk was not so fortunate as to rediscover the rock seen by Hortsmann, but he has seen and described others on the banks of the Essequibo, near the cascade of Warraputa. "This cascade," he says, "is celebrated not only for its height but also for the quantity of figures cut on the rock, which have great resemblance to those which I have seen in the island of St. John, one of the Virgin Islands, and which I consider to be, without doubt, the work of the Caribs, by whom that part of the Antilles was formerly inhabited. I made the utmost efforts to detach portions of the rock which contained the inscription, and which I desired to take with me, but the stone was too hard and fever had taken away my strength. Neither promises nor threats could prevail on the Indians to give a single blow with a hammer to these rocks—the venerable monuments of the superior mental cultivation of their predecessors. They regard them as the work of the Great Spirit, and the different tribes who we met with, though living at a great distance, were nevertheless acquainted with them. Terror was painted on the faces of my Indian companions, who appeared to expect every moment that the fire of heaven would fall on my head. I saw clearly that my endeavors would be fruitless, and I contented myself with bringing away a complete drawing of these memorials." * * * Even the veneration everywhere testified by the Indians of the present day for these rude sculptures of their predecessors, shews that they have no idea of the execution of similar works. There is another circumstance which should be mentioned: between Encaramada and Caycara, on the banks of the Orinoco, a number of these hieroglyphical figures are sculptured on the face of precipices at a height which could now be reached only by means of extraordinarily high scaffolding. If one asks the natives how these figures have been cut, they answer, laughing, as if it were a fact of which none but a white man could be ignorant, that "in the days of the great waters their fathers went in canoes at that height." Thus a geological fancy is made to afford an answer to the problem presented by a civilization which has long passed away.

Mr. A. Pinart has for several years past been engaged in ethnologic researches, in which, as he explained to the present writer, orally, he has discovered a very large number of pictographs in the islands of the Caribbean Sea, in Venezuela, and Nicaragua, with remarkable correspondences between some of them, and strongly demarkating lines in regard to different types. His report will be of inestimable value in the complete discussion of this subject.

PETROGLYPHS IN BRITISH GUIANA.

In particular, a copious extract is given from the recent work Among the Indians of Guiana, by Everard F. im Thurn: London, 1883. His account is so suggestive for comparison with the similar discoveries made in North America that there is a temptation to extract from it even more liberally than has been done.

The following is taken from pages 391, *et seq.*, of that author:

The pictured rocks, which are certainly the most striking and mysterious of the antiquities of Guiana, are—and this has apparently never yet been pointed out—not all of one kind. In all cases various figures are rudely depicted on larger or smaller surfaces of rocks. Sometimes these figures are painted, though such cases are few and, as will be shown, of little moment; more generally they are graven on the rock, and these alone are of great importance. Rock sculptures may, again, be distinguished into two kinds, differing in the depth of incision, the apparent mode of execution, and, most important of all, the character of the figures represented.

Painted rocks in British Guiana are mentioned by Mr. C. Barrington Brown, well known as a traveler in the colony. He says, for instance, that in coming down past Amailah fall (in the same district and range as the Kaieteur), on the Cooriebrong River, he passed 'a large white sandstone rock ornamented with figures in red paint.' When in the Pacaraima mountains, on the Brazilian frontier, I heard of the existence of similar paintings in that neighborhood, but was unable to find them. Mr. Wallace, in his account of his 'Travels on the Amazons,' mentions the occurrence of similar drawings in more than one place near the Amazons; and from these and other accounts it seems probable that they occur in various parts of South America. If, as seems likely, these figures are painted with either of the red pigments which the Indians use so largely to paint their own bodies as well as their weapons and other implements, or, as is also possible, with some sort of red earth, they must be modern, the work of Indians of the present day; for these red pigments would not long withstand the effects of the weather, especially where, as in the case quoted from Mr. Brown, the drawings are on such an unenduring substance as sandstone. Some further account of these paintings is, however, much to be desired; for, though they are probably modern, it would be very interesting to know whether the designs resemble those depicted on the engraved rocks, or are of the kind with which the Indian at the present time ornaments both his own skin and his household utensils and paddles. It may be mentioned that in the Christy collection there is a stone celt from British Guiana on which are painted lines very closely resembling in character those which the Indian commonly paints on his own body.

The engraved rocks, on the contrary, must be of some antiquity; that is to say, they must certainly date from a time before the influence of Europeans was much felt in Guiana. As has already been said, the engravings are of two kinds and are probably the work of two different people; nor is there even any reason to suppose that the two kinds were produced at one and the same time.

These two kinds of engraving may, for the sake of convenience, be distinguished as 'deep,' [a typical example of which is in Figure 2] and 'shallow' [typical example Figure 3,] respectively, according as the figures are deeply cut into the rock or are merely scratched on the surface. The former * * vary from one-eighth to one-half of an inch, or even more, in depth; the latter are of quite inconsiderable depth. This difference probably corresponds with a difference in the means by which they were produced. The deep engravings seem cut into the rock with an edged tool, probably of stone; the shallow figures were apparently formed by long continued friction with stones and moist sand. The two kinds seem never to occur in the same place or even near to each other; in fact, a distinct line may almost be drawn between the districts in which the deep and shallow kinds occur, respectively; the deep * * form occurs at several spots on the Mazeruni, Essequibo, Ireng, Cotinga, Potaro, and Berbice Rivers. The shallow form has as yet only been reported from the Corentyn River and its tributaries, where, however, examples occur in considerable abundance. But the two kinds differ not only in the depth of incision, in the apparent mode of their production, and in the place of their occurrence, but also—and this is the chief difference between the two—in the figures represented.

* * * * * * *

They (the shallow engravings) seem always to occur on comparatively large and more or less smooth surfaces of rock, and rarely, if ever, as the deep figures, on detached blocks of rock, piled one on the other. The shallow figures, too, are generally much larger, always combinations of straight or curved lines in figures much more elaborate than those which occur in the deep engravings; and these shallow pictures always represent not animals, but greater or less variations of the figure which has been described. Lastly, though I am not certain that much significance can be attributed to this, all the examples that I have seen face more or less accurately eastward.

The deep engravings, on the other hand, consist not of a single figure but of a greater or less number of rude drawings. * * These depict the human form, monkeys, snakes, and other animals, and also very simple combinations of two or three straight or curved lines in a pattern, and occasionally more elaborate combinations. The individual figures are small, averaging from twelve to eighteen inches in height, but a considerable number are generally represented in a group.

Some of the best examples of this latter kind are at Warrapoota cataracts, about six days' journey up the Essequibo.

* * * The commonest figures at Warrapoota are figures of men or perhaps sometimes monkeys. These are very simple, and generally consist of one straight line, representing the trunk, crossed by two straight lines at right angles to the body line: one, about two-thirds of the distance from the top, represents the two arms as far as the elbows, where upward lines represent the lower part of the arms; the other, which is at the lower end, represents the two legs as far as the knees, from which point, downward lines represent the lower part of the legs. A round dot, or a small circle, at the top of the trunk-line, forms the head; and there are a few radiating lines where the fingers, a few more where the toes, should be. Occasionally the trunk-line is produced downwards as if to represent a long tail. Perhaps the tailless figures represent men, the tailed monkeys. In a few cases the trunk, instead of being indicated by one straight line, is formed by two curved lines, representing the rounded outlines of the body; and the body, thus formed, is bisected by a row of dots, almost invariably nine in number, which seem to represent vertebræ.

Most of the other figures at Warrapoota are very simple combinations of two, three, or four straight lines similar to the so-called 'Greek meander pattern,' which is of such widespread occurrence. Combinations of curved lines and simple spiral lines also frequently occur. Many of these combinations closely resemble the figures which the Indians of the present day paint on their faces and naked bodies. The resemblance is, however, not so great but that it may be merely due to the fact that the

figures are just such simple combinations of lines which would occur independently to the rock-engravers and to the body-painters as to all other untaught designers.

FIG. 2.—Deep carvings in Guiana.

The same author (pp. 368, 369) gives the following account of the superstitious reverence entertained for the petroglyphs by the living Indians of Guiana:

Every time a sculptured rock or striking mountain or stone is seen, Indians avert the ill-will of the spirits of such places by rubbing red peppers (*Capsicum*) each in his or her own eyes. For instance, on reaching the Timehri rock on the Corentyn River, I at once began to sketch the figures sculptured thereon. Looking up the next moment I saw the Indians—men, women and children—who accompanied me all grouped round the rock-picture, busily engaged in this painful operation of pepper-rubbing. The extreme pain of this operation when performed thoroughly by the Indians I can faintly realize from my own feelings when I have occasionally rubbed my eyes with fingers which had recently handled red-peppers ; and from the fact that, though

the older practitioners inflict this self-torture with the utmost stoicism, I have again and again seen that otherwise rare sight of Indians, children, and even young men, sobbing under the infliction. Yet the ceremony was never omitted. Sometimes when by a rare chance no member of the party had had the forethought to provide peppers, lime-juice was used as a substitute; and once, when neither peppers nor

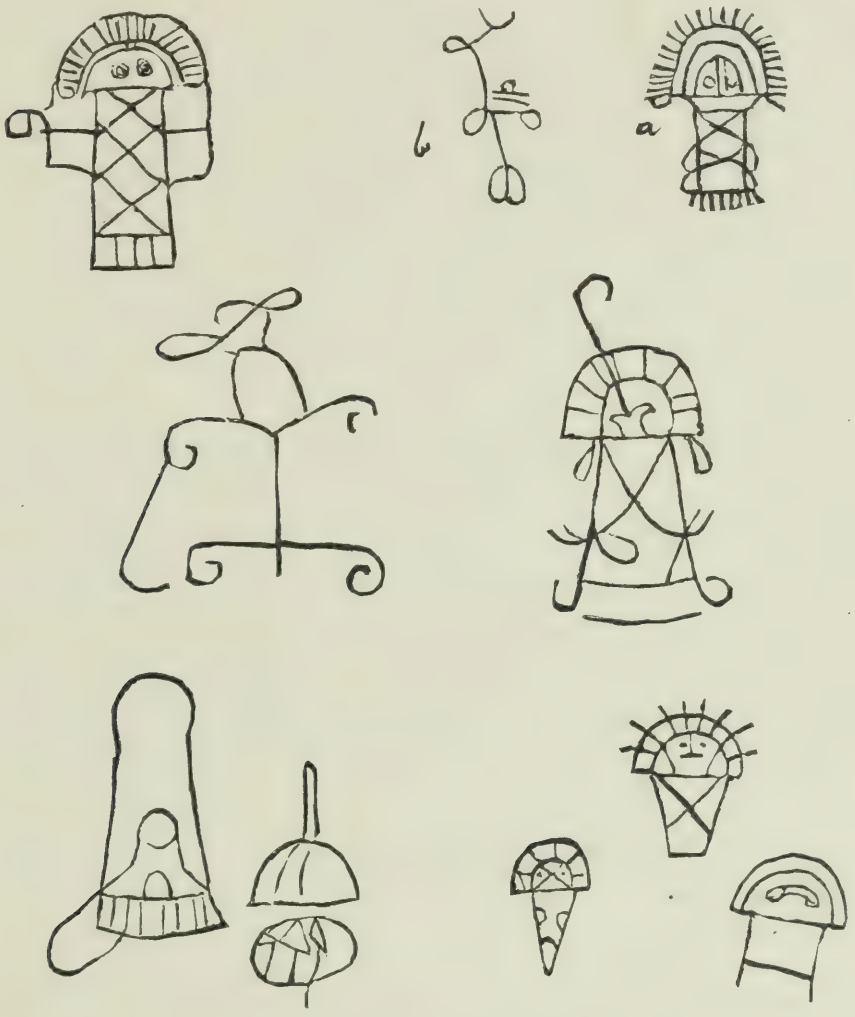


FIG. 3.—Shallow carvings in Guiana.

limes were at hand, a piece of blue indigo-dyed cloth was carefully soaked, and the dye was then rubbed into the eyes. These, I believe, are the only ceremonies observed by the Indians. One idea underlies them all, and that is the attempt to avoid attracting the attention of malignant spirits.

The following extract from a paper on the Indian picture writing in British Guiana, by Mr. Charles B. Brown, in the Journal of the Anthropological Institute of Great Britain and Ireland, 1873, Vol. II, 254–257, gives views and details somewhat different from the foregoing:

These writings or markings are visible at a greater or less distance in proportion to the depth of the furrows. In some instances they are distinctly visible upon the rocks on the banks of the river at a distance of one hundred yards; in others they are so faint that they can only be seen in certain lights by reflected rays from their polished surfaces. They occur upon greenstone, granite, quartz-porphyry, gneiss, and jasperous sandstone, both in a vertical and horizontal position, at various elevations above the water. Sometimes they can only be seen during the dry season, when the rivers are low, as in several instances on the Berbice and Cassikytyn rivers. In one

instance, on the Corentyne river, the markings on the rock are so much above the level of the river when at its greatest height, that they could only have been made by erecting a staging against the face of the rock, unless the river was at the time much above its usual level. The widths of the furrows vary from half an inch to one inch, while the depth never exceeds one-fourth of an inch. Sometimes the markings are almost level with the surrounding surfaces, owing to the waste or degradation by atmospheric influences, which have acted with greater force upon the rough rock than on the polished face of the grooved markings. The furrows present the same weather-stained aspect as the rocks upon which they are cut, and both the rocks and the furrows are in some instances coated with a thin layer of the oxides of iron and manganese.

The Indians of Guiana know nothing about the picture writing by tradition. They scout the idea of their having been made by the hand of man, and ascribe them to the handiwork of the Makunaima, their great spirit. Nevertheless, they do not regard them with any superstitious feelings, looking upon them merely as curiosities, which is the more extraordinary as there are numbers of large rocks without any markings on some rivers, which they will not even look at in passing, lest some calamity should overtake them. Their Peaimen or sorcerers always squeeze tobacco juice in their eyes on approaching these, but pay no regard to the sculptured rocks. In the Pacaraima mountains, between the villages of Mora and Itabay, the path passes through a circle of square stones placed on one end, one of which has a carving upon it; some of these blocks have been thrown down and broken by the Indians, clearly proving their utter disregard for them. If then there were any traditions regarding these writings handed down from father to son, I conclude that the Indians of the present day—the most superstitious of beings—would undoubtedly treat them with awe and respect. Again, if their forefathers were as indolent as they now are, they never would have gone to the trouble of making these pictures merely for the purpose of passing away their time, which they could have more easily accomplished by lying in their hammocks from morning to night in a semi-dreamy sort of state, as their descendants do at present. As these figures were evidently cut with great care and at much labor by a former race of men, I conclude that they were made for some great purpose, probably a religious one, as some of the figures give indications of Phallic worship.

PETROGLYPHS IN BRAZIL.

The following is an abstract from a paper by J. Whitfield on Rock Inscriptions in Brazil, in the Journal of the Anthropological Institute of Great Britain and Ireland, 1874, Vol. III, p. 114:

The rock inscriptions were visited in August, 1865, during an exploring expedition for gold mines in the province of Ceará. Several similar inscriptions are said to exist in the interior of the province of Ceará, as well as in the provinces of Pernambuco and Piauhy, especially in the *Sertaõs*, that is, in the thinly-wooded parts of the interior, but no mention is ever made of their having been seen near the coast.

In the margin and bed only of the river are the rocks inscribed. On the margin they extend in some instances to fifteen or twenty yards. Except in the rainy reason the stream is dry. The rock is a silicious schist of excessively hard and flinty texture. The marks have the appearance of having been made with a blunt heavy tool, such as might be made with an almost worn-out mason's hammer.

The situation is about midway between Serra Grande or Ibiapaba and Serra Merioca, about seventy miles from the coast and forty west of the town Sobral. There are not any indications of works of art or other antiquarian remains, nor anything peculiar to the locality. The country is gently undulating, and of the usual character that obtains for hundreds of miles extending along the base of the Serra Ibiapaba.

The native population attribute all the 'Letreiros' (inscriptions), as they do every-

thing else of which they have no information, to the Dutch as records of hidden wealth. The Dutch, however, only occupied the country for a few years in the early part of the seventeenth century. Along the coast numerous forts, the works of the Dutch, still remain; but there are no authentic records of their ever having established themselves in the interior of the country, and less probability still of their amusing themselves with inscribing puzzling hieroglyphics, which must have been a work of time, on the rocks of the far interior, for the admiration of wandering Indians.

PICTOGRAPHS IN PERU.

Dr. J. J. Von Tschudi mentions in his Travels in Peru during the years 1838–1842, [Wiley and Putnam's Library, Vols. XCIII–XCIV, New York, 1847,] Pt. II, p. 345–346, that the ancient Peruvians also used a certain kind of "hieroglyphics" which they engraved in stone, and preserved in their temples. Notices of these "hieroglyphics" are given by some of the early writers. There appears to be a great similarity between these Peruvian pictographs and those found in Mexico and Brazil.

The temptation to quote from Charles Wiener's magnificent work Pérou et Bolivie, Paris, 1880, and also from La Antigüedad del Hombre en el Plata, by Florentino Ameghino, Paris (and Buenos Aires), 1880, must be resisted.

OBJECTS REPRESENTED IN PICTOGRAPHS.

The objects depicted in pictographs of all kinds are too numerous and varied for any immediate attempt at classification. Those upon the petroglyphs may, however, be usefully grouped. Instructive particulars regarding them may be discovered, for instance the delineation of the fauna in reference to its present or former habitat in the region where the representation of it is found, is of special interest.

As an example of the number and kind of animals pictured, as well as of their mode of representation, the following Figures, 4 to 21, are presented, taken from the Moki inscriptions at Oakley Springs, Arizona, by Mr. G. K. Gilbert. These were selected by him from a large number of etchings, for the purpose of obtaining the explanation, and they were explained to him by Tubi, an Oraibi chief living at Oraibi, one of the Moki villages.

Jones, in his Southern Indians, p. 377–379, gives a résumé of objects depicted as follows:

> Upon the Enchanted Mountain in Union County, cut in plutonic rock, are the tracks of men, women, children, deer, bears, bisons, turkeys and terrapins, and the outlines of a snake, of two deer, and of a human hand. These sculptures—so far as they have been ascertained and counted—number one hundred and thirty-six. The most extravagant among them is that known as the footprint of the "Great Warrior." It measures eighteen inches in length, and has six toes. The other human tracks and those of the animals are delineated with commendable fidelity. * * *
>
> Most of them present the appearance of the natural tread of the animal in plastic clay. * * * These *intaglios* closely resemble those described by Mr. Ward [Jour. Anthrop. Inst. of N. Y., No. 1, 57 *et seq.*], as existing upon the upheaved strata of coarse carboniferous grit in Belmont County, Ohio, near the town of Barnesville.

The appearance of objects showing the influence of European civilization and christianization should always be carefully noted. An instance where an object of that character is found among a multitude of others not liable to such suspicion is in the heart surmounted by a cross, in the upper line of Figure 1, page 30 *ante*. This suggests missionary teaching.

Fig. 4

Fig. 5.

Fig. 6.

Fig. 7.

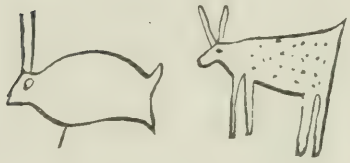


Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

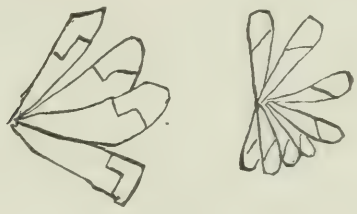


Fig. 12.

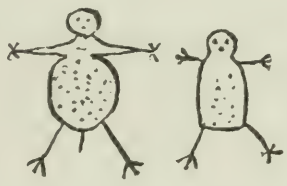


Fig. 13.

Fig. 14.

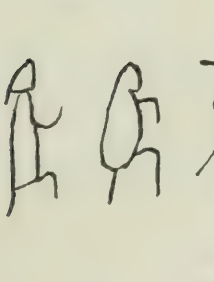


Fig. 15.

Fig. 16.

Fig. 17.

Fig. 18.

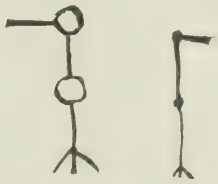


Fig. 19.

Fig. 20.

Fig. 21.

The following is the explanation of the figures:

Fig. 4. A beaver.
5. A bear.
6. A mountain sheep (*Ovis montana*).
7. Three wolf heads.
8. Three Jackass rabbits.
9. Cottontail rabbit.
10. Bear tracks.
11. An eagle.
12. Eagle tails.
13. A turkey tail.
14. Horned toads (*Phryosoma* sp. ?).
15. Lizards.
16. A butterfly.
17. Snakes.
18. A rattlesnake.
19. Deer track.
20. Three Bird tracks.
21. Bitterns (wading birds).

INSTRUMENTS USED IN PICTOGRAPHY.

These are often of anthropologic interest. A few examples are given as follows, though other descriptions appear elsewhere in this paper.

INSTRUMENTS FOR CARVING.

This includes etching, pecking, and scratching.

The Hidatsa, when carving upon stone or rocks, as well as upon pieces of wood, use a sharply pointed piece of hard stone, usually a fragment of quartz.

The bow-drill was an instrument largely used by the Innuit of Alaska in carving bone and ivory. The present method of cutting figures and other characters, to record events and personal exploits, consists in the use of a small blade, thick, though sharply pointed, resembling a graver.

INSTRUMENTS FOR DRAWING.

When in haste, or when the necessary materials are not at hand, the Hidatsa sometimes prepare notices by drawing upon a piece of wood or the shoulder blade of a buffalo with a piece of charcoal obtained from the fire, or with a piece of red chalk, with which nearly every warrior is at all times supplied.

INSTRUMENTS FOR PAINTING.

Painting upon robes or skins is accomplished by means of thin strips of wood, or sometimes of bone. Tufts of antelope hair are also used, by tying them to sticks to make a brush. This is evidently a modern innovation. Pieces of wood, one end of each chewed so as to produce a loose fibrous brush, are also used at times, as has been observed among the Titon Dakota.

The Hidatsa, Arikara, and other Northwest Indians usually employ a piece of buffalo rib, or a piece of hard wood, having somewhat of an elliptical or lozenge-shaped form. This is dipped in thin glue and a tracing is made, which is subsequently treated in a similar manner with a solution of glue, water, and color.

INSTRUMENTS FOR TATTOOING.

The Hidatsa say that formerly, when tattooing was practiced, sharp pieces of bone were used for pricking the skin.

The tribes of Oregon, Washington, and northern California used sharp pieces of bone, thorns, and the dorsal spines of fish, though at present needles are employed, as they are more effective and less painful, and are readily procured by purchase.

Needles are used by the Klamath Indians, according to Mr. Gatschet.

Rev. M. Eells reports (Bull. U. S. Geol. and Geog. Survey II, p. 75) that for tattooing the Twana Indians use a needle and thread, blackening the thread with charcoal and drawing it under the skin as deeply as they can bear it.

Stephen Powers says (Contrib. to N. A. Ethnol. III., p. 130) that tattooing among the Yuki is done with pitch-pine soot, and a sharp-pointed bone. After the designs have been traced on the skin the soot is rubbed in dry.

Paul Marcoy mentions in his Travels in South America, N. Y., 1875, Vol. II, 353, that the Passés, Yuris, Barrés and Chumanas, of Brazil, use a needle for tattooing.

The following quotation is from Te Ika a Maui, or New Zealand and its Inhabitants, by Rev. Richard Taylor, London, 1870, pp. 320, 321:

> The substance generally used as coloring matter is the resin of the *kauri* or *rimu*, which, when burnt, is pounded and converted into a fine powder.
>
> The *uhi* or instrument used was a small chisel, made of the bone of an albatross, very narrow and sharp, which was driven by means of a little mallet, *he mahoe*, quite through the skin, and sometimes completely through the cheek as well, in which case when the person undergoing the operation took his pipe, the smoke found its way out through the cuttings; the pain was excruciating, especially in the more tender parts, and caused dreadful swellings, only a small piece could be done at a time; the operator held in his hand a piece of *muka*, flax, dipped in the pigment, which he drew over the incision immediately it was made; the blood which flowed freely from the wound was constantly wiped away with a bit of flax; the pattern was first drawn either with charcoal or scratched in with a sharp-pointed instrument. To tattoo a person fully was therefore a work of time, and to atten pt to do too much at once endangered life. I remember a poor *porangi*, or insane person, who, during the war, was tattooed most unmercifully by some young scoundrels; the poor man's wounds were so dreadfully inflamed, as to occasion his death; whilst any one was being operated upon, all persons in the pa were tapu, until the termination of the work, lest any evil should befall him; to have fine tattooed faces, was the great ambition of young men, both to render themselves attractive to the ladies, and conspicuous in war: for even if killed by the enemy, whilst the heads of the untattooed were treated with indignity and kicked on one side, those which were conspicuous by their beautiful moko, were carefully cut off, stuck on the *turuturu*, a pole with a cross on it, and then preserved; all which was highly gratifying to the survivors, and the spirits of their late possessors.
>
> The person operated upon was stretched all his length on the ground, and to encourage him manfully to endure the pain, songs were continually sung to him.

COLORS AND METHODS OF APPLICATION.

IN THE UNITED STATES.

Since the establishment of traders' stores most colors of civilized manufacture are obtained by the Indians for painting and decoration. Frequently, however, the primitive colors are prepared and used when Indians are absent from localities where those may be obtained. The ferruginous clays of various shade of brown, red, and yellow, occur so widely distributed in nature that these are the most common and leading tints. Black is generally prepared by grinding fragments of charcoal into a very fine powder. Among some tribes, as has been found in some of the "ancient" pottery from the Arizona ruins, clay had evidently been mixed with charcoal to give better body. The black color of some of the Innuit tribes is blood and charcoal intimately mixed, which is afterwards applied to the incisions made in ivory, bone, and wood.

Among the Dakota, colors for dyeing porcupine quills are obtained chiefly from plants, or have been until very recently. The vegetable colors, being soluble, penetrate the substance of the quills more evenly and beautifully than the mineral colors of eastern manufacture.

The black color of some of the Pueblo pottery is obtained by a special burning with pulverized manure, into which the vessel is placed as it is cooling after the first baking. The coloring matter—soot produced by smoke—is absorbed into the pores of the vessel, and will not wear off as readily as when colors are applied to the surface with sticks or primitive brushes.

In decorating skins or robes the Arikara Indians boil the tail of the beaver, thus obtaining a viscous fluid which is in reality thin glue. The figures are first drawn in outline with a piece of beef-rib, or some other flat bone, the edge only being used after having been dipped into the liquor. The various pigments to be employed in the drawing are then mixed with some of the same liquid, in separate vessels, when the various colors are applied to the objects by means of a sharpened piece of wood or bone. The colored mixture adheres firmly to the original tracing in glue, and does not readily rub off.

When similar colors are to be applied to wood, the surface is frequently picked or slightly incised to receive the color more securely. For temporary purposes, as for mnemonic marks upon a shoulder blade of a buffalo or upon a piece of wood to direct comrades upon the course to be pursued to attain a certain object, a piece of red chalk, or a lump of red ocher of natural production is resorted to. This is often carried by the Indian for personal decoration.

A small pouch, discovered on the Yellowstone River in 1873, which had been dropped by some fleeing hostile Sioux, contained several fragments of black micaceous iron. The latter had almost the appearance and consistence of graphite, so soft and black was the result upon

rubbing it. It had evidently been used for decorating the face as war-paint.

Mr. Dall, in treating of the remains found in the mammalian layers in the Amakuak cave, Unalashka, remarks (Contributions to N. A. Ethnology, I, p. 79) that "in the remains of a woman's work-basket, found in the uppermost layer in the cave, were bits of this resin [from the bark of pine or spruce driftwood], evidently carefully treasured, with a little birch-bark case (the bark also derived from drift logs) containing pieces of soft hæmatite, graphite, and blue carbonate of copper, with which the ancient seamstress ornamented her handiwork."

The same author reports, *op. cit.* p. 86, "The coloration of wooden articles with native pigments is of ancient origin, but all the more elaborate instances that have come to my knowledge bore marks of comparatively recent origin. The pigments used were blue carbonates of iron and copper; the green fungus, or *peziza*, found in decayed birch and alder wood; hæmatite and red chalk; white infusorial or chalky earth; black charcoal, graphite, and micaceous ore of iron. A species of red was sometimes derived from pine bark or the cambium of the ground willow."

Stephen Powers states in Contributions to N. A. Ethnology, III, 244, that the Shastika women "smear their faces all over daily with chokecherry juice, which gives them a bloody, corsair aspect."

Mr. A. S. Gatschet reports that the Klamaths of southwestern Oregon employ a black color, *lgú*, made of burnt plum seeds and bulrushes, which is applied to the cheeks in the form of small round spots. This is used during dances. Red paint, for the face and body, is prepared from a resin exuding from the spruce tree, *pánam*. A yellow mineral paint is also employed, consisting probably of ocher or ferruginous clay. Mr. Gatschet says the Klamath *spál*, yellow mineral paint, is of light yellow color, but turns red when burned, after which it is applied in making small round dots upon the face. The white infusorial earth (?), termed chalk by Mr. Gatschet, is applied in the form of stripes or streaks over the body. The Klamaths use charcoal, *lgúm*, in tattooing.

The various colors required by a tribe were formerly obtained from plants as by the Dakota, while some of the earthy compounds consisted of red and yellow ocher—oxides of iron—and black micaceous ore of iron and graphite. Some of the California Indians in the vicinity of Tulare River also used a white color, obtained at that locality, and consisted of infusorial earth—diatomaceous. The tribes at and near the geysers, north of San Francisco Bay, obtained their vermilion from croppings of sulphuret of mercury—cinnabar. The same is said to have been the case at the present site of the New Almaden mines, where tribes of the Mutsun formerly lived. Black colors were also prepared by mixing finely powdered charcoal and clay, this being practiced by some of the Pueblos for painting upon pottery. Some of the black color obtained

from pictographs in Santa Barbara County, California, proved to be a hydrous oxide of manganese.

For black color in tattooing the Yuki, of California, use soot. The juice of certain plants is also used by the Karok, of California, to color the face.

The Yokuts, of Tule River Agency, California, employ the roots of the cedar (red) and willow (white) split and rendered uniform in caliber. During work the materials are kept moistened, so as to permit of easy manipulation and to prevent fracture of the vegetal fibers.

Rev. J. Owen Dorsey, of the Bureau of Ethnology, reports regarding the Osages that one mode of obtaining black color for the face consists in burning a quantity of small willows. When these are charred they are broken in small pieces and placed in pans, with a little water in each. The hands are then dipped into the pan and rubbed together, and finally rubbed over the parts to be colored.

Formerly tattooing was more frequently practiced among the Hidatsa than at present, the marks being caused by pricking the skin with a sharp splinter of bone and the application of a paste consisting of finely-powdered charcoal and water.

The Hualpais, living on the western border of the Colorado Plateau, Arizona Territory, were found by Dr. Hoffman, in 1871, to decorate their persons by a disgusting process. Various individuals were observed who appeared as if their persons had been tattooed in vertical bands from the forehead to the waist, but upon closer examination it was found that dark and light bands of the natural skin are produced in the following manner: When a deer or an antelope has been killed, the blood is rubbed over the face and breast, after which the spread and curved fingers—to resemble claws—are scratched downward from the forehead over the face and over the breast, thus removing some of the blood; that remaining soon dries, and gives the appearance of black stripes. The exposed portion of the skin retains the natural dark-tanned color, while that under the coating of coagulated blood naturally becomes paler by being protected against the light and air. These individuals do not wash off such marks of success in the chase, and after a while the blood begins to drop off by desquamation, leaving lighter spots and lines, which for a short period of a week or two appear like tattoo marks.

The Mojave pigments are ocher, clay, and probably charcoal, mingled with oil. See Pac. R. R. Exped., Vol. III, Pt. III, p. 33.

The colors, at present used by the Indians and obtained from the traders, consist generally of the following compounds, viz.: vermilion, red lead, chromate of lead (yellow), Prussian blue, chrome green, ivory black and lamp black, Chinese white, and oxide of zinc. All of these are in the form of powder or in crude masses, and are subsequently prepared for use as required.

IN BRITISH GUIANA.

Everard F. im Thurn, *op. cit.*, p. 316, gives the following details:

The dyes used by the Indians to paint their own bodies, and occasionally to draw patterns on their implements, are red faroah, purple caraweera, blue-black lana, white felspathic clay, and, though very rarely, a yellow vegetable dye of unknown origin.

Faroah is the deep red pulp around the seed of a shrub (*Bixa orellana*), which grows wild on the banks of some of the rivers, and is cultivated by the Indians in their clearings. Mixed with a large quantity of oil, it is then either dried and so kept in lumps which can be made soft again by the addition of more oil, or is stored in a liquid condition in tubes made of hollow bamboo-stems. When it is to be used, either a mass of it is taken in the palm of the hand and rubbed over the skin or other surface to be painted, or a pattern of fine lines is drawn with it by means of a stick used as a pencil. The True Caribs also use faroah largely to stain their hammocks.

Caraweera is a somewhat similar dye, of a more purplish red, and by no means so commonly used. It is prepared from the leaves of a yellow flowered bignonia (*B. chicka*), together with some other unimportant ingredients. The dried leaves are boiled for a few minutes over a fire, and then some fresh-cut pieces of the bark of a certain tree and a bundle of twigs and fresh leaves of another tree are added to the mixture. The whole is then boiled for about twenty minutes, care being taken to keep the bark and leaves under water. The pot is then taken from the fire, and the contents, being poured into bowls, are allowed to subside. The clear water left at the top is poured away, and the sediment, of a beautiful purple colour, is put into a cloth, on which it is allowed to dry; after this it is scraped off and packed in tiny baskets woven of the leaves of the cokerite palm. The pigment is used for body-painting, with oil, just as is faroah.

Lana is the juice of the fruit of a small tree (*Genipa americana*), with which, without further preparation, blue-black lines are drawn in patterns, or large surfaces are stained on the skin. The dye thus applied is for about a week indelible.

One or more of the three body paints already mentioned is used by most Indians and in large quantities. But the white, and still more the yellow, pigments are used only rarely, in lines or dots, and very sparingly, by some of the Savannah Indians. The white substance is simply a very semi-liquid felspathic clay, which occurs in pockets in one or two places on the savannah; this is collected and dried in lumps, which are then pierced, threaded, and so put aside for future use. The nature of the yellow dye I was never able to trace; all that the Indians could or would say was that they received it in small quantities from a tribe living beyond the Wapianas, who extracted it from a tree which only grows in that neighborhood.

Paul Marcoy, in Travels in South America: N. Y., 1875, Vol. II, p. 353, says the Passés, Yuris, Barrés, and Chumanas, of Brazil, employ a decoction of indigo or genipa in tattooing.

SIGNIFICANCE OF COLORS.

Significance has been attached to the several colors among all peoples and in all periods of culture. That it is still recognized in the highest civilizations is shown by the associations of death and mourning connected with black, of innocence and peace with white, danger with red, and epidemic disease, officially, with yellow. Without dwelling upon

the modern popular fancies on this subject, some illustrations from antiquity may be useful for comparison.

The Babylonians represented the sun and its sphere of motion by gold, the moon by silver, Saturn by black, Jupiter by orange, Mars by red, Venus by pale yellow, and Mercury by deep blue. Red was anciently and generally connected with divinity and power both priestly and royal. The tabernacle of the Israelites was covered with skins dyed red and the gods and images of Egypt and Chaldea were noticeably of that color, which to this day is the one distinguishing the Roman Pontiff and the cardinals.

In ancient art each color had a mystic sense or symbolism, and its proper use was an important consideration and carefully studied. With regard to early Christian art, the following extract is given from Mrs. Clement's Handbook of Legendary and Mythologic Art, Boston, 1883. The associations with the several colors therein mentioned differ widely from those in modern folk-lore—for instance, those with green and yellow, from the same colors stigmatized in the song produced by Mr. Black in his Three Feathers, exhibiting the belief in Cornwall that "green's forsaken and yellow's forsworn."

White is worn by the Saviour after his resurrection, by the Virgin in representations of the Assumption; by women as the emblem of chastity; by rich men to indicate humility, and by the judge as the symbol of integrity. It is represented sometimes by silver or the diamond, and its sentiment is purity, virginity, innocence, faith, joy, and light.

Red, the color of the ruby, speaks of royalty, fire, divine love, the holy spirit, creative power, and heat. In an opposite sense it symbolized blood, war, and hatred. Red and black combined were the colors of Satan, purgatory, and evil spirits. Red and white roses are emblems of love and innocence, or love and wisdom, as in the garland of St. Cecilia.

Blue, that of the sapphire, signified heaven, heavenly love and truth, constancy and fidelity. Christ and the Virgin Mary wear the blue mantle, St. John a blue tunic.

Green, the emerald, the color of spring, expressed hope and victory.

Yellow or gold was the emblem of the sun, the goodness of God, marriage and fruitfulness. St. Joseph and St. Peter wear yellow. Yellow has also a bad signification when it has a dirty, dingy hue, such as the usual dress of Judas, and then signifies jealousy, inconstancy, and deceit.

Violet or amethyst signified passion and suffering, or love and truth. Penitents, as the Magdalene, wear it. The Madonna wears it after the crucifixion, and Christ after the resurrection.

Gray is the color of penance, mourning, humility, or accused innocence.

Black with white signified humility, mourning, and purity of life. Alone, it spoke of darkness, wickedness, and death, and belonged to Satan. In pictures of the Temptation Jesus sometimes wears black.

It is probable that, at one time, the several colors, at least in the same Indian tribe, had each special significance. This general significance was, however, modified by specific positions of the colors.

Colors are generally applied at this day according to fancy and without regard to special signification. The warriors make a distinction when on the warpath, and when mourning a deceased relative or en-

gaged in dances and religious ceremonies the members of most of the tribes still exhibit precise care in the selection and arrangement of color.

The Dakota at Grand River Agency, now abandoned, generally painted the face red from the eyes down to the chin when going to war. The whole face was blacked with charcoal or ashes when mourning. The women frequently resorted to this method of expressing grief.

The Absaroka, or Crow Indians, generally paint the forehead red when on the war-path. This distinction of the Crows is also noted by the Dakota in recording pictographic narratives of encounters with the Crows. See page 62, and Figures 124 *et. seq.*

Haywood, Nat. and Aborig. Hist. of Tennessee, 1823, p. 228, says of the Cherokees:

"When going to war their hair is combed and annointed with bear's grease and the red-root [*Sanguinaria canadensis?*], and they adorn it with feathers of various beautiful colours, besides copper and iron rings, and sometimes wampum or peak in the ears. And they paint their faces all over as red as vermillion, making a circle of black about one eye and another circle of white about the other."

When a Modoc warrior paints his face black before going into battle it means victory or death, and he will not survive a defeat. See Bancroft's Native Races, I, p. 333.

The Los Angeles County Indian girls paint the cheeks sparingly with red ocher when in love. (Bancroft, I, 403.) This prevails, to some extent also, among the northern bands of the Sioux, and among the Arikara at Fort Berthold, Dakota.

Rev. J. Owen Dorsey reports that when the Osage men go to steal horses from the enemy they paint their faces with charcoal.

The same authority gives the following description of the Osage paint for war parties:

Before charging the foe the Osages warriors paint themselves anew. This is called the death paint. If any of the men die with this paint on them the survivors do not put on any other paint.

All the gentes on the Tsiɔa side use the "fire paint" or iɣama^{n}, which is red. It is applied by them with the left hand all over the face. And they use prayers about the fire: "As the fire has no mercy, so should we have none." Then they put mud on the cheek below the left eye, as wide as two or more fingers. On the Hañɣa side this mud is put on the cheek, below the right eye. It is the young buffalo bull decoration (Tse-ɣú-ɔiñ′ɣa kínŭ^{n} itáaḍi aú). With reference to it, a man says, "My little grandfather (the young buffalo bull) is ever dangerous, as he makes attempts. Very close do I stand, ready to go to the attack" (Witsíɣu ɔiñ′ɣa wáckŭ^{n} nŭ^{n}′pewáɸĕ ehnu^{n}ḍi aú. Ecŭ^{n}qtsita waɣa^{n}′ɸa ḍɸé atqa^{n}′hi aú!) The horse is painted with some of the mud on the left cheek, shoulder, and thigh.

For the corresponding Hanka decorations, substitute *the right* for *the left* wherever the latter word occurs above.

Some who act like a black bear paint with charcoal alone.

Some paint in the wind style, some in the lightning style, and others in the panther or puma style.

See also pages 85 and 162.

When a Thlinkit arms himself for war he paints his face and powders his hair a brilliant red. He then ornaments his head with white eagle-feathers, a token of stern vindictive determination. See Bancroft, Native Races, etc., I, page 105.

Blue signifes peace among the Indians of the Pueblo of Tesuque. See Schoolcraft, III, 306.

In several addresses before the Anthropological Society of Washington, D. C., and papers yet unpublished, in the possession of the Bureau of Ethnology, by Mr. James Stevenson, Dr. Washington Matthews, U. S. Army, and Mr. Thomas V. Keam, the tribes below are mentioned as using in their ceremonial dances the respective colors designated to represent the four cardinal points of the compass, viz.:

	N.	S.	E.	W.
Stevenson—Zuñi	Yellow.	Red.	White.	Black.
Matthews—Navajo	Black.	Blue.	White.	Yellow.
Keam—Moki	White.	Red.	Yellow.	Blue.

Capt. John G. Bourke, U. S. Army, in the Snake Dance of the Moquis of Arizona, etc., New York, 1884, p. 120, says that the Moki employ the following colors: yellow in prayers for pumpkins, green for corn, and red for peaches. Black and white bands are typical of rain, while red and blue bands are typical of lightning.

The Central Californians (north of San Francisco Bay) formerly wore the down of Asclepias (?) (white) as an emblem of royalty. See Bancroft, Native Races, I, 387, 388, quoting Drake's World Encomp. pp. 124–126.

The natives of Guatemala wore red feathers in their hats, the nobles only wearing green ones. *Ibid*, p. 691.

See with reference to the Haidas, Mr. J. G. Swan's account, page 66, *infra*.

The following extract relative to the color red among the New Zealanders is from Taylor's Te Ika a Maui, etc., pp. 209–210.

Closely connected with religion, was the feeling they entertained for the Kura, or Red Paint, which was the sacred color; their idols, *Pataka*, sacred stages for the dead, and for offerings or sacrifices, *Urupa* graves, chief's houses, and war canoes, were all thus painted.

The way of rendering anything tapu was by making it red. When a person died, his house was thus colored; when the tapu was laid on anything, the chief erected a post and painted it with the kura; wherever a corpse rested, some memorial was set up, oftentimes the nearest stone, rock, or tree served as a monument; but whatever object was selected, it was sure to be made red. If the corpse were conveyed by water, wherever they landed a similar token was left; and when it reached its destination, the canoe was dragged on shore, thus distinguished, and abandoned. When

the hahunga took place, the scraped bones of the chief, thus ornamented, and wrapped in a red-stained mat, were deposited in a box or bowl, smeared with the sacred color, and placed in a tomb. Near his final resting-place a lofty and elaborately carved monument was erected to his memory; this was called *he tiki*, which was also thus colored.

In former times the chief annointed his entire person with red ochre; when fully dressed on state occasions, both he and his wives had red paint and oil poured upon the crown of the head and forehead, which gave them a gory appearance, as though their skulls had been cleft asunder.

A large number of examples occur in the present paper where the use and significance of color is mentioned. Among these see pages 64, 165–'6–'7, and 183.

MATERIALS UPON WHICH PICTOGRAPHS ARE MADE.

These may be divided into:
1st. Natural objects other than the human person.
2d. The human person.
3d. Artificial objects.

NATURAL OBJECTS.

Under the first head, the most important division is that of rocks and stones, many examples of which have already been presented. In addition to those respecting stone, Mr. Gilbert furnishes some data relating to the sacred stone kept by the Indians of the village of Oraibi, on the Moki mesas. This stone was seen by Messrs. John W. Young and Andrew S. Gibbon, and the notes were made by Mr. Gilbert from those furnished to him by Mr. Young. Few white men have had access to this sacred record, and but few Indians have enjoyed the privilege.

Mr. Gilbert remarks that "the stone was evidently squared by the eye and not by any instrument. The engraving seems to have been done with some rude instrument, but executed with some degree of skill, like an ancient art faded into dim remembrance of the artist or writer of the characters. The stone is a red clouded marble, entirely different from anything found in the region, so I learn by the Indians. The stone is badly worn, and some of the characters are difficult to determine."

According to the notes accompanying the rude drawings of this stone, it is an oblong rectangle, measuring $11\frac{3}{4}$ inches long, $7\frac{1}{4}$ inches wide, and $1\frac{1}{2}$ inches thick. On one side there is an interior space, also an oblong rectangle measuring about three-fourths of the size of the whole tablet, between which and the outer margin are six nude human figures resembling one another, one at either end and two on each of the two sides. The interior space may have contained characters, though no traces are now visible.

On the other side are drawings of the sun, clouds with rain descending therefrom, lightning, stars, arrows, foot-prints of the bear, and several other undeterminable characters.

No history of the origin and import of this tablet has been obtained.

Other materials may be mentioned as follows:

BONE.

For instances of the use of bone, refer to several Alaska ivory carvings in this paper, *e. g.*, Figure 111, page 192; Comanche buffalo shoulder blade, Figure 137, page 216; Hidatsa shoulder blade, page 151; New Zealand human bone, Figure 34, page 74.

THE LIVING TREE.

An example is to be found in Schoolcraft, IV, p. 253, Pl. 33, Fig. A, where it is stated that Mr. Richard H. Kern furnished a copy of an Indian drawing, which was "found on the trunk of a cottonwood tree in the valley of King's River, California, and evidently represents the manner of catching different wild animals with the lasso."

The use of the lasso, and the characters being upon the bark of a living tree, show sufficient reason to believe that this record was of modern workmanship.

WOOD.

The Indians of the Northwest Coast generally employ wood upon which to depict objects of various kinds. These appear to partake of a mythical nature, sometimes becoming absurdly grotesque. Totem posts (Plate LXXXIII, page 199), boats, boat paddles, the boards constituting the front wall of a house, and masks are among the objects used upon which to display artistic skill.

Ottawa drawings are also found upon pipe-stems made of wood, usually ash. Figure 120, page 204, is an example of this.

Among the Arikara boat paddles are used upon which marks of personal distinction are reproduced, as shown in Figure 80, page 182.

Wooden dancing ornaments, such as fanciful representations of the human figure, idols, etc., are generally ornamented with a variety of colors, having them sometimes arranged to represent designs closely related to, if not actually signifying, marks of gentile distinction.

In Alaska, mortuary records are drawn upon slabs of wood. See Figures 113 and 114, page 198. Mnemonic devices, notices of departure, distress, etc., are also drawn upon thin narrow slips of wood, averaging an inch in width, and of sufficient length. See Figures 58 and 59, page 154. A circular piece of wood or board is sometimes drawn upon, showing the human face, and placed upon a pole, and facing in a certain direction, to show the course taken by the survivors of a settlement which has been attacked by an enemy. See Figure 50, page 152.

BARK.

The Ojibwa have, until very recently, been in the habit of tracing characters of various kinds upon the inner surface of birch bark. These records are usually mnemonic, though many pertain to personal exploits. An illustration is given in Figure 139, page 218. The lines appear to have been traced with a sharply-pointed instrument, probably bone, and in some examples the drawings are made by simple puncturing. Sometimes color is applied to the objects delineated, and

apparently with reference to specific signification. The strips of bark, varying from an inch to several feet in length, roll up upon drying, and are straightened out for examination by heating near the fire.

SKINS.

This includes scalps. A large number of records upon the hides of animals are mentioned in the present paper. Plate IV with its description in the Dakota Winter Counts is one instance.

FEATHERS.

The Sacramento tribes of California are very expert in weaving blankets of feathers, many of them having really beautiful figures worked upon them. This is reported by Edward M. Kern in Schoolcraft, V, 649, 650.

The feather work in Mexico, Central America and the Hawaiian Islands is well known, often having designs properly to be considered among pictographs, though in general not, at least in modern times, passing beyond ornamentation.

GOURDS.

After gourds have dried the contents are removed and handles are attached; they serve as rattles in dances, and in religious and shamanistic rites. The representations of natural or mythical objects for which the owner may have special reverence are often depicted upon their surfaces. This custom prevails among the Pueblos generally, and, also, among many other tribes, notably those constituting the Siouan linguistic stock.

HORSE HAIR.

The Hidatsa, Arikara, Dakota, and several other tribes of the Northwest plains, use horse hair dyed red as appendages to feathers worn as personal marks of distinction. Its arrangement is significant.

SHELLS, INCLUDING WAMPUM.

The illustrated and exhaustive paper of Mr. W. H. Holmes, in the Second Annual report of the Bureau of Ethnology, removes all necessity for present extended mention under this head.

EARTH AND SAND.

Papers by Dr. Washington Matthews, U. S. A., Dr. W. H. Corbusier, U. S. A., and Mr. James Stevenson were read in the Anthropological Society of Washington during the season of 1884–5, giving account of important and entirely novel paintings by the Navajo, Yuman, and Zuni Indians. These paintings were made upon the ground by means of sand, ashes, and powdered vegetable matter of various colors. These were highly elaborate, made immediately preceding certain ceremonies, at the close of which they were obliterated.

Dr. W. J. Hoffman states that when the expedition under command of Capt. G. M. Wheeler, U. S. A., passed through Southern Nevada in

1871, the encampment for one night was at Pai-Uta Charlie's rancheria, where it was visited by many of the Pai-Uta Indians of that vicinity. On leaving camp the following morning representations of many mounted men, the odometer cart and pack animals were found depicted upon the hard, flat surface of the sand. The Indians had drawn the outlines in life size with sticks of wood, and the work was very artistically done. A mounted expedition was a new thing in that part of the country and amused them not a little.

The well-known animal mounds, sometimes called effigy mounds, of Wisconsin come in this category.

THE HUMAN PERSON

Pictographs upon the human person may be divided into, 1st, paint on the face; 2d, paint on the body; and, 3d, tattooing, which is also divided into tattoo marks upon the head and tattoo marks upon the body.

PAINT.

Dr. Hoffman, who visited the Hualpai Indians of northern Arizona in 1871, gives an account (see *ante*, p. 52) of their habit of besmearing their bodies and faces with the blood of game killed.

A colored plate, facing page 33 of the report of the Pacific Railroad Expedition, 1856, pt. III, shows the designs adopted by the Mojave Indians for painting the body. These designs consist of transverse lines extending around the body, arms, and legs, or horizontal lines, or different parts may partake of different designs. Clay is now generally used, as was observed by Dr. Hoffman, who visited Camp Mojave in 1871.

For other notices of paint on head and body and the significance of color see *ante*, page 53 *et seq.*

Everard F. im Thurn, in his work before cited, page 196, describes the painting of the Indians of Guiana as follows:

> The paint is applied either in large masses or in patterns. For example, a man, when he wants to dress well, perhaps entirely coats both his feet up to the ankles with a crust of red; his whole trunk he sometimes stains uniformly with blue-black, more rarely with red, or covers it with an intricate pattern of lines of either colour; he puts a streak of red along the bridge of his nose; where his eyebrows were till he pulled them out he puts two red lines; at the top of the arch of his forehead he puts a big lump of red paint, and probably he scatters other spots and lines somewhere on his face. The women, especially among the Ackawoi, who use more body-paint than other ornament, are more fond of blue-black than of red; and one very favorite ornament with them is a broad band of this, which edges the mouth, and passes from the corners of that to the ears. Some women especially affect certain little figures, like Chinese characters, which look as if some meaning were attached to them, but which the Indians are either unable or unwilling to explain.

The Serranos, near Los Angeles, California, formerly cut lines upon the trees and posts, marking boundaries of land, these lines corresponding to those adopted by the owner as facial decorations. See page 182.

During his connection with the Yellowstone expedition of 1873, under the command of General Stanley, Dr. Hoffman found elaborate narratives of hostile encounters between the Absaroka and Dakota Indians incised upon the bark of cotton-wood trees, in the valley of the Musselshell River. The Absaroka were shown by having the bark in the forehead removed, thus corresponding to their war custom of painting that portion of the face red, while the Dakota were denoted by having only the part of the face from the eyes down to the chin removed, referring to their custom of painting that part of the face. The number of individuals was shown by the outline of one individual of either tribe, with added short lines. The total number of arms was shown by drawing one gun and the requisite number of spots. The number of horses was indicated in a similar manner.

See also with reference to paint on the human person, pages 165 and 167.

The present writer, when reading the magnificent work of Conte Giovanni Gozzadini, Di Ulteriori Scoperte Nell' Antica Necropoli a Marzabotto nel Bolognese, Bologna, 1870, noticed in Plate XII, Figure 1, the representation of a human head in bronze of great antiquity, and that it shows incised lines over the superior malar region, below and outward from the outer canthus of the eye. To any one recently familiar with tattooing and the lines of face painting this gives a decided suggestion, and is offered as such.

The head is reproduced in Figure 22.

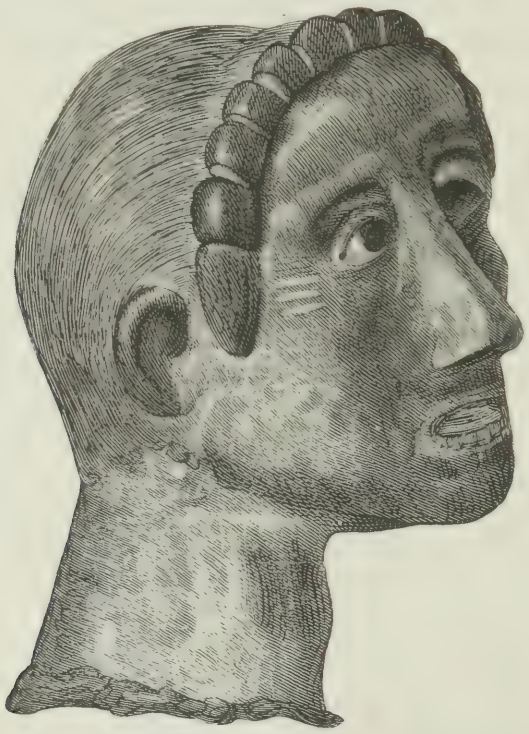


FIG. 22.—Bronze head from the Necropolis of Marzabotto, Italy.

A less distinct suggestion arose from the representation of a "Fragment of a lustrous black bowl, with an incised decoration filled with

white chalk," pictured in Troja, etc., by Dr. Henry Schliemann, New York, 1884, p. 31, No. 1, and here presented, Figure 23. In the absence of knowledge as to the connection of the two sets of parallel lines on each side of the face, with the remainder of the bowl, it is not possible to form any decision as to whether there was any intention to portray face painting or tattooing, or whether the lines merely partook of the general pattern of the bowl. The lines, however, instantly caught the present writer's eye as connected with the subject now under consideration.

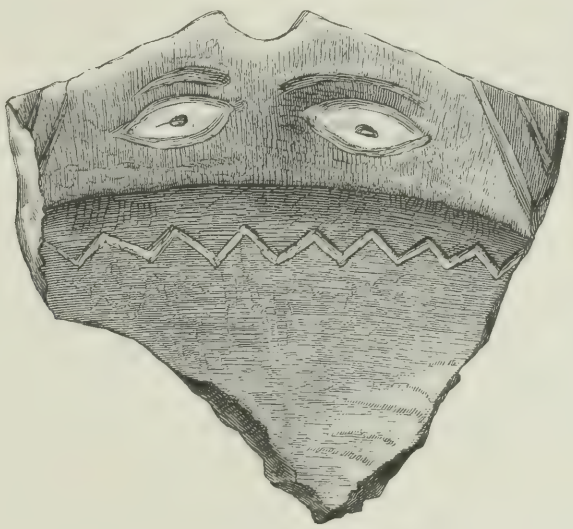


FIG. 23.—Fragment of bowl from Troja.

TATTOOING.

Tattooing, a permanent marking of the skin as distinguished from the temporary painting, and accomplished by the introduction of coloring matter under the cutaneous epidermis, was formerly practiced extensively among the Indians of North America. Some authorities for this statement are here quoted, as also some descriptions of the custom where still practiced.

Capt. John Smith, in "The True Travels, Adventures, etc.," Richmond, 1819, Vol. I, page 130, is made to say of the Virginia Indians:

"They adorne themselues most with copper beads and paintings. Their women, some haue their legs, hands, breasts and face cunningly imbrodered with divers workes, as beasts, serpents, artificially wrought into their flesh with blacke spots."

The Innuit, according to Cook, practiced tattooing perpendicular lines upon the chin of women, and sometimes similar lines extending backward from near the outer portions of the eyes.

Mr. Gatschet reports that very few Klamath men now tattoo their faces, but such as are still observed have but a single line of black running from the middle of the lower lip to the chin. The women have three lines, one from each corner of the mouth and one down over the center of the chin.

The Modoc women tattoo three blue lines, extending perpendicularly

from the center and corners of the lower lip to the chin. See Bancroft, Native Races, I, p. 332.

Stephen Powers says (Contrib. N. A. Ethnol., III, p. 20) that the Karol, California, squaws tattoo in blue three narrow fern leaves perpendicularly on the chin, one falling from each corner of the mouth and one in the middle. For this purpose, they are said to employ soot gathered from a stone, mingled with the juice of a certain plant.

The same author reports, page 76: "Nearly every (Hupâ, California) man has ten lines tattooed across the inside of the left arm, about half way between the wrist and the elbow; and in measuring shell-money, he takes the string in his right hand, draws one end over his left thumb-nail, and if the other end reaches to the uppermost of the tattoo lines, the five shells are worth $25 in gold or $5 a shell. Of course it is only one in ten thousand that is long enough to reach this high value."

The same author, on page 96, says: The squaws (Pat'awāt, Cal.) tattoo in blue three narrow pinnate leaves perpendicularly on their chins, and also lines of small dots on the backs of their hands.

He reports, page 148, of the Kas'tel Pomo: The women of this and other tribes of the Coast Range frequently tattoo a rude representation of a tree or other object, covering nearly the whole abdomen and breast.

Of the Wintūns of California the same author says (page 233) that the squaws all tattoo three narrow lines, one falling from each corner of the mouth, and one between.

See also page 167 *infra.*

Rev. M. Eells says (Bull. U. S. Geol. and Geog. Survey, III, p. 75) of the Twana Indians: A little of this tattooing is done, but much less than formerly, and chiefly now among the children.

Blue marks tattooed upon a Mojave woman's chin denotes that she is married. See Pacific R. R. Exped., III, 1856, p. 33.

The only remarkable instance of tattooing now among the Hidatsa is that of Lean-Wolf, the present second chief of the tribe. The ornamentation consists of horizontal stripes, from one-third to one-half an inch broad, running from the middle of the breast around the right side of the body to the spinal column. The right arm and the right leg are encircled by similar bands, between which there are spaces of equal width. Lean-Wolf professed not to be able to give the origin and history of this ornamentation, although he represents himself with it upon pictographs relating to personal events of warfare and the chase.

Bancroft (Native Races, Vol. I, p. 48) says of the Eskimo, that the females tattoo lines on their chins; the plebeian female of certain bands has one vertical line in the center and one parallel to it on either side. The higher classes mark two vertical lines from each corner of the mouth. On page 72 he says that young Kadiak wives tattoo the breast and adorn the face with black lines. The Kuskoquim women sew into their chin two parallel blue lines. This color is applied by

drawing a thread under the skin or pricking it with a needle. On page 117 he says that the Chippewyans have tattooed cheeks and foreheads. Both sexes have blue or black bars or from one to four straight lines to distinguish the tribe to which they belong; they tattoo by entering an awl or needle under the skin and on drawing it out, immediately rubbing powdered charcoal into the wounds. On page 127 he states that on the Yukon River among the Kutchins, the men draw a black stripe down the forehead and the nose, frequently crossing the forehead and cheeks with red lines and streaking the chin alternately with red and black, and the women tattoo the chin with a black pigment.

It will be observed that these statements by Bancroft, about tattooing among the Hyperboreans, seem to be confined to the face, except as is mentioned among the Kadiak, where the women tattoo the breast, and that these tattoo marks seem to be simple straight lines, either vertical or horizontal.

In this place is properly inserted the following report of original research among the Haidas on this subject, by Mr. James G. Swan, of Port Townsend, Washington, for which the thanks of this Bureau are tendered to him.

TATTOO MARKS OF THE HAIDA INDIANS OF QUEEN CHARLOTTE ISLANDS, B. C., AND THE PRINCE OF WALES ARCHIPELAGO, ALASKA.

By James G. Swan.

H. H. Bancroft, in his "Native Races, Pacific States," Vol. I, p. 155, includes in the Haida family the nations occupying the coast and islands from the southern extremity of Prince of Wales Archipelago to the Bentinck Arms in about 52° N.

Their territory is bounded on the north and east by the Thlinkeet and Carrier nations of the Hyperboreans, and on the south by the Nootka family of the Columbians.

Its chief nations, or, more correctly speaking, bands, whose boundaries, however, can rarely be fixed with precision, are the Massets, Skiddegates, Cumshawas, Laskeets, and the Skringwai, of Queen Charlotte Islands: the Kaigani, Howkan, Klemakoan, and Kazan, of Prince of Wales Archipelago; the Chimsyans, about Fort Simpson and on Chatham Sound; the Nass and the Skenas, on the rivers of the same name; the Sebasses, on Pitt Archipelago and the shores of Gardiner Channel, and the Millbank Sound Indians, including the Hailtzas, Bella Bella, Bella Coola, etc.

Among all the tribes or bands belonging to the Haida family, the practice of tattooing the person in some manner is common; but the most marked are the Haidas proper, or those living on Queen Charlotte Islands, and the Kaiganis, of Prince of Wales Archipelago, Alaska. Of the Haida tribe, H. H. Bancroft says (Works 1882, Vol. I, p. 159), "Besides the regular lip piece, ornaments various in shape and material, of shell, bone, wood, or metal, are worn, stuck in the lips, nose, and ears, apparently according to the caprice or taste of the wearer, the skin being sometimes, though more rarely, tattooed to correspond." The authors quoted by Bancroft for this information are Mayne's British Columbia, p. 282; Barrett-Lennard's Travels, pp. 45, 46; Poole's Queen Charlotte Islands, pp. 75–311; Dunn's Oregon, pp. 279, 285, and Reed, who says, "The men habitually go naked, but when they go off on a journey they wear a blanket."

How this latter writer, presuming he speaks from personal experience, could have seen naked Haida men without noticing tattoo marks, I cannot understand. On page 182 of the same volume of Bancroft, footnote, is the following: "'The habit of tattooing the legs and arms is common to all the women of Vancouver's Island; the men do not adopt it.' Grant, in Lond. Geog. Soc. Jour., Vol. XXVII, p. 307. 'No

such practice as tattooing exists among these natives.' Sproat's Scenes, p. 27."

What Grant says applies not to the women of Vancouver's Island, but to those of Queen Charlotte Islands. Sproat seems to have given more of his attention to some fancied terminal in their language, upon which he builds his theory of the "Aht" nation, than to the observance of their personal peculiarities. I am of the opinion, judging from my own observation of over twenty years among the coast tribes, that but few females can be found among the Indians, not only on Vancouver's Island, but all along the coast to the Columbia River, and perhaps even to California, that are *not* marked with some device tattooed on their hands, arms, or ankles, either dots or straight lines; but of all the tribes mentioned, the Haidas stand pre-eminent for tattooing, and seem to be excelled only by the natives of the Fiji Islands or the King's Mills Group in the South Seas. The tattoo marks of the Haidas are heraldic designs or the family totem, or crests of the wearers, and are similar to the carvings depicted on the pillars and monuments around the homes of the chiefs, which casual observers have thought were idols.

In a memoir written by me on the Haida Indians, for the Smithsonian Institution, and published as No. 267 of Contributions to Knowledge, I have given illustrations of various tattoo designs and heraldic carvings in wood and stone, but did not attempt to delineate the position or appearance of those designs upon their bodies or limbs, although all the tattoo marks represented in that memoir were copied by me directly from the persons of the Haidas, as stated in the illustrations.

The publication of this memoir, with its illustrations, which I showed to the Haidas and Kaiganis in 1875, during my cruise to Alaska in the United States revenue steamer Wolcott, gave them confidence in me that I had not made the drawings from idle curiosity, and in February, 1879, I was fortunate enough to meet a party of Haida men and women in Port Townsend, Washington, who permitted me to copy their tattoo marks again.

These designs are invariably placed on the men between the shoulders, just below the back of the neck on the breast, on the front part of both thighs, and on the legs below the knee. On the women they are marked on the breast, on both shoulders, on both fore-arms, from the elbow, down over the back of the hands, to the knuckles, and on both legs below the knee to the ankle.

When the Haidas visit Victoria or the towns on Puget Sound they are dressed in the garb of white people and present a respectable appearance, in marked contrast with the Indians from the west coast of Vancouver's Island, or the vicinity of Cape Flattery, who dress in a more primitive manner, and attract notice by their more picturesque costumes than do the Haidas, about whom there is nothing outwardly of unusual appearance, except the tattoo marks on the hands of the women, which show their nationality at a glance of the most careless observer.

As I before remarked, almost all of the Indian women of the northwest coast have tattoo marks on their hands and arms, and some on the face; but as a general thing these marks are mere dots or straight lines, having no particular significance. With the Haidas, however, every

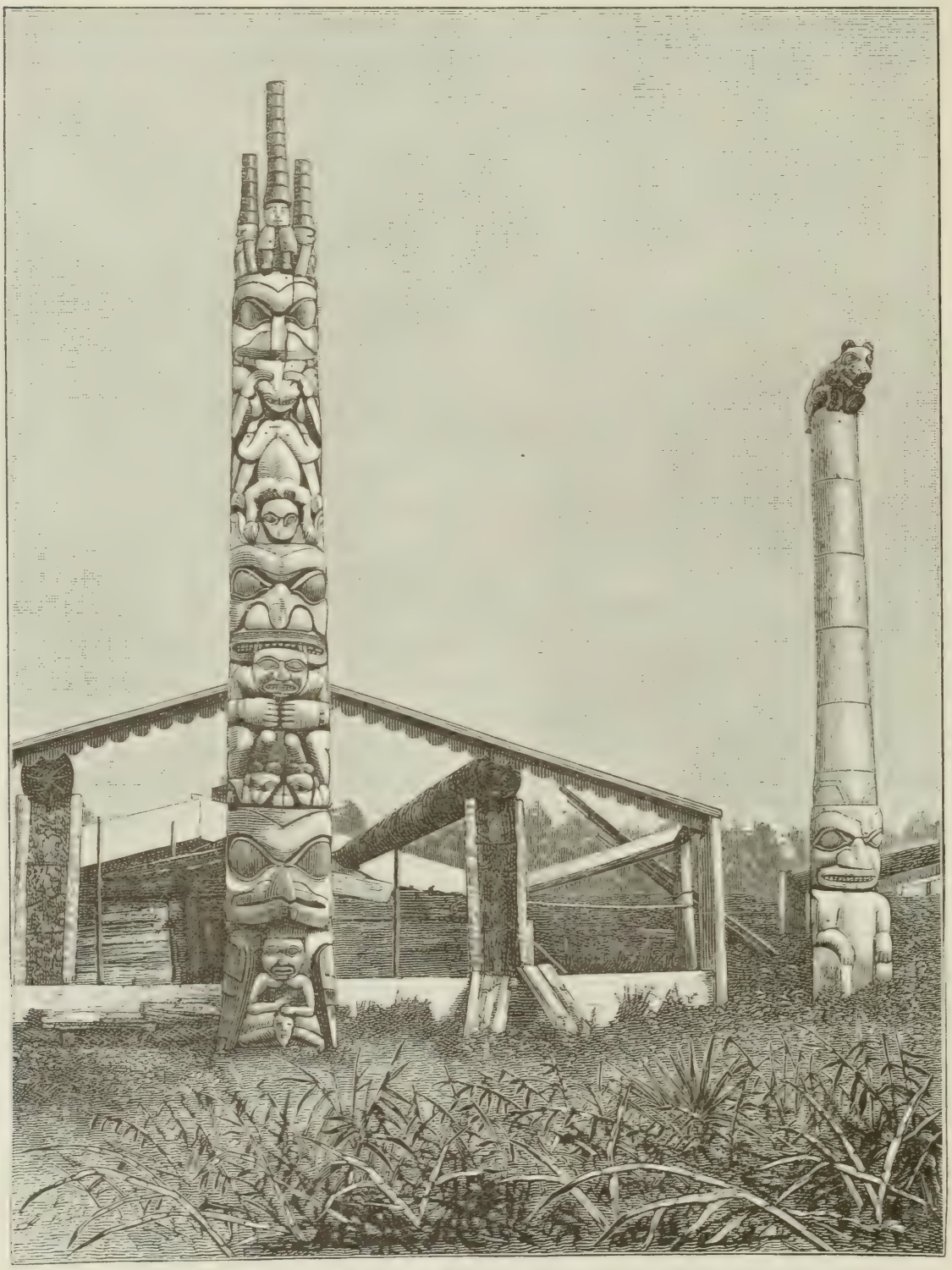


FIG. 24.—Haida Totem Post.

mark has its meaning; those on the hands and arms of the women indicate the family name, whether they belong to the bear, beaver, wolf, or eagle totems, or any of the family of fishes. As one of them quaintly

remarked to me, "If you were tattooed with the design of a swan, the Indians would know your family name."

Although it is very easy to distinguish the Haida women from those of other tribes by seeing the tattoo marks on the backs of their hands, yet very few white persons have cared to know the meaning of these

FIG. 25.—Haida man, tattooed. FIG. 26.—Haida woman, tattooed.

designs, or are aware of the extent of the tattoo marks on the persons of both sexes.

In order to illustrate this tattooing as correctly as possible, I inclose herewith a view (Figure 24) taken at Massett, Queen Charlotte Island, of

the carved columns in front of the chief's residence; and also sketches of the tattoo marks on two women and their husbands taken by me at Port Townsend.

It should be borne in mind that during their festivals and masquerade performances the men are entirely naked and the women have only a short skirt reaching from the waist to the knee; the rest of their

FIG. 27.—Haida woman, tattooed.

FIG. 28.—Haida man, tattooed.

persons are exposed, and it is at such times that the tattoo marks show with the best effect, and the rank and family connection known by the variety of designs.

Like all the other coast tribes, the Haidas are careful not to permit the intrusion of white persons or strangers to their Tomanawos cere-

monies, and as a consequence but few white people, and certainly none of those who have ever written about those Indians, have been present at their opening ceremonies when the tattoo marks are shown.

FIG. 29.—Skulpin.

FIG. 30.—Frog.

FIG. 31.—Cod.

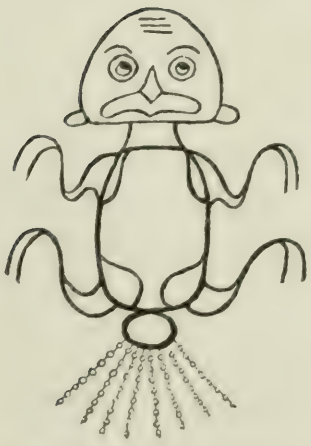


FIG 32.—Squid or octupus.

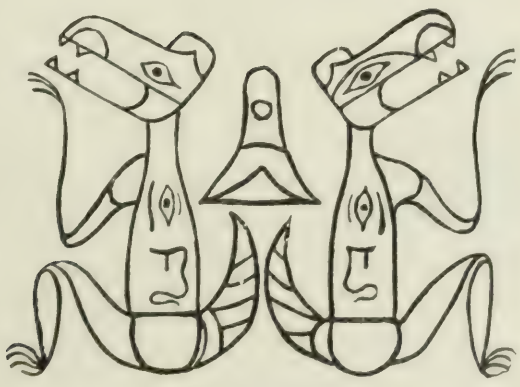


FIG. 33.—Wolf.

My information was derived from the Haidas themselves, who explained to me while I was making the drawings, and illustrated some of the positions assumed in their dances by both sexes.

Fig. 25 represents a man. On his breast is the cod (kahatta) split from the head to the tail and laid open; on each thigh is the octopus (noo), and below each knee is the frog (flkamkostan).

Figure 26 represents a woman. On her breast is the head with fore-paws of the beaver (tsching); on each shoulder is the head of the eagle or thunder-bird (skamskwin); on each arm, extending to and covering the back of the hand, is the halibut (hargo); on the right leg is the sculpin (kull); on the left leg is the frog (flkamkostan).

Figure 27 is a woman with the bear's head (hoorts) on her breast. On each shoulder is the eagle's head, and on her arms and legs are figures of the bear.

Figure 28 shows the back of a man with the wolf (wasko) split in halves and tattooed between his shoulders, which is shown enlarged in Figure 33. Wasko is a mythological being of the wolf species similar to the chu-chu-hmexl of the Makah Indians, an antediluvian demon supposed to live in the mountains.

The skulpin on the right leg of the woman in Figure 26 is shown enlarged in Figure 29; the frog in the left leg in Figure 30.

The codfish on the man in Figure 25 is shown enlarged in Figure 31, the octopus or sqid in Figure 32.

As the Haidas, both men and women, are very light colored, some of the latter, full blooded Indians too, having their skins as fair as Europeans, the tattoo marks show very distinct. These sketches are not intended as portraits of persons, but simply to illustrate the positions of the various tattoo marks. To enter into a detailed description would require more space and study than is convenient at this time. Enough is given, it is hoped, to convey to you an idea of this interesting subject, which will require much study to properly elaborate or understand.

This tattooing is not all done at one time nor is it every one who can tattoo. Certain ones, almost always men, have a natural gift which enables them to excel in this kind of work. One of the young chiefs, named Geneskelos, was the best designer I knew, and ranked among his tribe as a tattooer. He belonged to Laskeek village on the east side of Moresby's Island, one of the Queen Charlotte group. I employed him to decorate the great canoe which I sent to the Centennial Exposition at Philadelphia in 1876, for the National Museum. I was with him a great deal of the time both at Victoria and Port Townsend. He had a little sketch book in which he had traced designs for tattooing, which he gave to me. He subsequently died in Victoria of small-pox, soon after he had finished decorating the canoe.

He told me the plan he adopted was first to draw the design carefully on the person with some dark pigment, then prick it in with needles and then rub over the wound with some more coloring matter till it acquired the proper hue He had a variety of instruments composed

of needles tied neatly to sticks. His favorite one was a flat strip of ivory or bone, to which he had firmly tied five or six needles, with their points projecting beyond the end just far enough to raise the skin without inflicting a dangerous wound, but these needle points stuck out quite sufficiently to make the operation very painful, and although he applied some substance to deaden the sensation of the skin, yet the effect was on some to make them quite sick for a few days; consequently the whole process of tattooing was not done at one time. As this tattooing is a mark of honor, it is generally done at or just prior to a Tomanawos performance and at the time of raising the heraldic columns in front of the chief's houses. The tattooing is done in open lodge and is witnessed by the company assembled. Sometimes it takes several years before all the tattooing is done, but when completed and the person well ornamented, then they are happy and can take their seats among the elders.

It is an interesting question, and one worthy of careful and patient investigation, Why is it that the Haida Nation alone of all the coast tribes tattoo their persons to such an extent, and how they acquire the art of carving columns which bear such striking similarity to carving in wood and stone by the ancient inhabitants of Central America, as shown by drawings in Bancroft's fourth volume of Native Races and in Habel's investigation in Central and South America?

Some of these idols in design, particularly on pages 40 to 58, and notably on pages 49–50 (Bancroft, *op. cit.*), are very like some small carvings I have in Port Townsend which I received from Alaska, showing a similarity of idea which could not be the result of an accident.

The tattoo marks, the carvings, and heraldic designs of the Haida are an exceedingly interesting study, and I hope what I have thus hastily and imperfectly written may be the means of awakening an interest to have those questions scientifically discussed, for they seem to me to point to a key which may unlock the mystery which for so many ages has kept us from the knowledge of the origin of the Pacific tribes.

TATTOOING IN THE PACIFIC ISLANDS.

The following quotations and illustrations of tattooing in the islands of the Pacific Ocean are presented for comparison, and in hopes that the discussion of the subject may afford further information upon the significance of tattoo marks. It is by no means probable that they were originally altogether or chiefly for ornamentation.

The accompanying illustration, Figure 34, is taken from a bone obtained from a mound in New Zealand, by Mr. I. C. Russell, of the United States Geological Survey, several years ago. Mr. Russell says that the Maori formerly tattooed the bones of enemies, though the custom now seems to have been abandoned. The work consists of sharp, shal-

low lines, as if made with a sharp-pointed steel instrument, into which some blackish pigment has been rubbed, filling up some of the markings, while in others scarcely a trace remains.

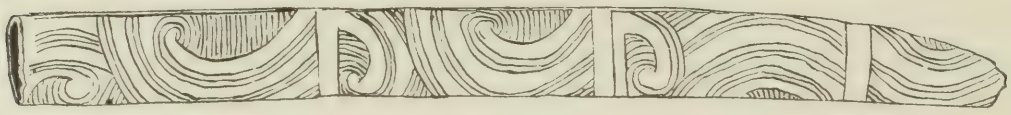


FIG. 34.—Tattoo designs on bone, New Zealand.

In connection with the use of the tattoo marks as reproduced on artificial objects see also, Figure 37, page 76, and Figure 116, page 200.

The following is extracted from Te Ika a Maui, or New Zealand and its inhabitants, by Rev. Richard Taylor, London, 1870, p. 320, etc.

Before they went to fight, the youth were accustomed to mark their countenance with charcoal in different lines, and their traditions state that this was the beginning of the tattoo, for their wars became so continuous, that to save the trouble of thus constantly painting the face, they made the lines permanent by the moko; it is however a question whether it did not arise from a different cause; formerly the grand mass of men who went to fight were the black slaves, and when they fought side by side with their lighter colored masters, the latter on those occasions used charcoal to make it appear they were all one.

Whilst the males had every part of the face tattooed, and the thighs as well, the females had chiefly the chin and the lips, although occasionally they also had their thighs and breasts, with a few smaller marks on different parts of the body as well. There were regular rules for tattooing, and the artist always went systematically to work, beginning at one spot and gradually proceeding to another, each particular part having its distinguishing name. Thus,

1. *Te kawe*, which are four lines on each side of the chin.
2. *Te pukawae*, six lines on the chin.
3. *Nga rere hupe*, the lines below the nostrils, six in number.
4. *Nga kohiri*, a curved line on the cheek-bone.
5. *Nga koroaha*, lines between the cheek-bone and ear.
6. *Nga wakarakau*, lines below the former.
7. *Nga pongiangia*, the lines on each side of the lower extremity of the nose.
8. *Nga pae tarewa*, the lines on the cheek-bone.
9. *Nga rerepi*, and *Nga ngatarewa*, lines on the bridge of the nose.
10. *Nga tiwana*, four lines on the forehead.
11. *Nga rewha*, three lines below the eyebrows.
12. *Nga titi*, lines on the center of the forehead.
13. *Ipu rangi*, lines above the former.
14. *Te tonokai*, the general names for the lines on the forehead.
15. *He ngutu pu rua*, both lips tattooed.
16. *Te rape*, the higher part of the thighs.
17. *Te paki paki*, the tattooing on the seat.
18. *Te paki turi*, the lower thigh.
19. *Nga tata*, the adjoining part.

The following are female tattoos:—

1. *Taki taki*, lines from the breast to the navel.
2. *Hope hope*, the lines on the thighs.
3. *Waka te he*, the lines on the chin.

Figure 35 is a copy of a tattooed head carved by Hongi, and also of the tattooing on a woman's chin, taken from the work last quoted.

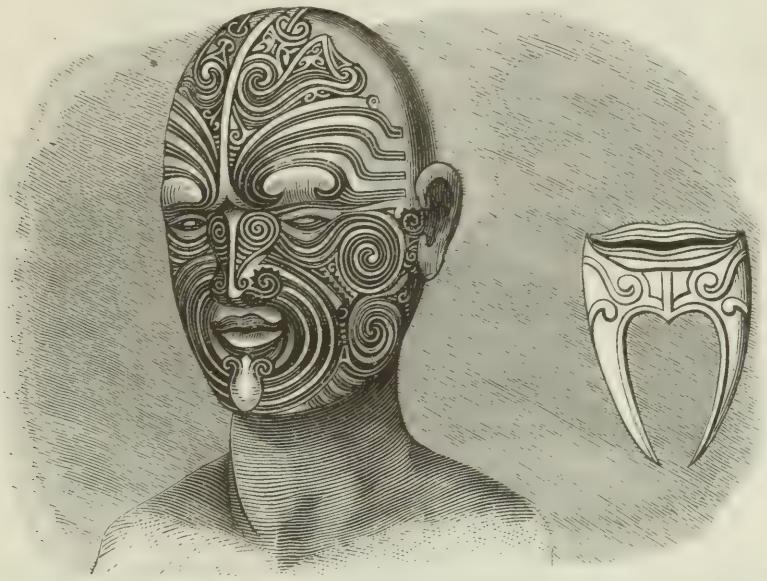


FIG. 35.—New Zealand tattooed head and chin mark.

Figure 36 is a copy of a photograph obtained in New Zealand by Mr. Russell. It shows tattooing upon the chin.

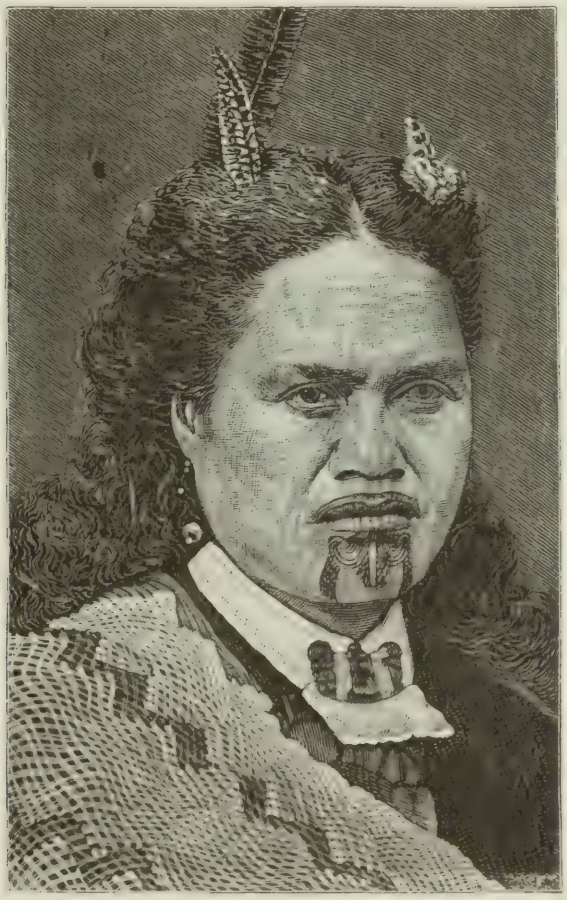


FIG. 36.—New Zealand tattooed woman.

Two beautifully tattooed heads are in the collection of the Army Medical Museum at Washington, D. C., of which illustrations are pre-

sented in the accompanying Plate, III. No history of these heads can be obtained. The skin is almost perfect, and has become much brighter in tint than the original color. The tattooing is a blue black, and in certain lights becomes almost bright indigo. In many of the markings there appear slight grooves, which add greatly to the general ornamentation, breaking the monotony of usually plain surfaces. Whether any mechanical work was performed upon the heads after death is not positively known, though from the general appearance of the work it would be suggested that the sharp creases or grooves was done subsequent to the death of the individual. The tattooing shows sub-cutaneous coloring, which indicates that at least part of the ornamentation was done in life.

Figure 37 is an illustration from Te Ika a Maui, etc., *op. cit.*, facing page 378. It shows the "grave of an Australian native, with his name, rank, tribe, etc., cut in hieroglyphics on the trees," which "hieroglyphics" are supposed to be connected with his tattoo marks.

FIG. 37.—Australian grave and carved trees.

Mr. I. C. Russell, in his sketch of New Zealand, published in the American Naturalist, Volume XIII, p. 72, February, 1879, remarks, that the desire of the Maori for ornament is so great that they covered their features with tattooing, transferring indelibly to their faces complicated patterns of curved and spiral lines, similar to the designs with which they decorated their canoes and their houses.

In Mangaia, of the Hervey Group, the tattoo is said to be in imitation of the stripes on the two kinds of fish, avini and paoro, the color of which is blue. The legend of this is kept in the song of Ina'. See Myths and songs from the South Pacific, London, 1876, p. 94.

NEW ZEALAND TATTOOED HEADS

Mr. Everard F. im Thurn, in his work previously cited, pages 195–'96 among the Indians of Guiana, says:

Painting the body is the simplest mode of adornment. Tattooing or any other permanent interference with the surface of the skin by way of ornament is practiced only to a very limited extent by the Indians; is used, in fact, only to produce the small distinctive tribal mark which many of them bear at the corners of their mouths or on their arms. It is true that an adult Indian is hardly to be found on whose thighs and arms, or on other parts of whose body, are not a greater or less number of indelibly incised straight lines; but these are scars originally made for surgical, not ornamental purposes.

The following extracts are taken from Samoa, by George Turner, LL. D., London, 1884:

Page 55. Taema and Tilafainga, or Tila the *sportive*, were the goddesses of the tattooers. They swam from Fiji to introduce the craft to Samoa, and on leaving Fiji were commissioned to sing all the way, "Tattoo the women, but not the men." They got muddled over it in the long journey, and arrived at Samoa singing, "Tattoo the *men* and not the women." And hence the universal exercise of the blackening art on the men rather than the women.

Page 88. "Herodotus found among the Thracians that the barbarians could be exceedingly foppish after their fashion. The man who was not tattooed among them was not respected." It was the same in Samoa. Until a young man was tattooed, he was considered in his minority. He could not think of marriage, and he was constantly exposed to taunts and ridicule, as being poor and of low birth, and as having no right to speak in the society of men. But as soon as he was tattooed he passed into his majority, and considered himself entitled to the respect and privileges of mature years. When a youth, therefore, reached the age of sixteen, he and his friends were all anxiety that he should be tattooed. He was then on the outlook for the tattooing of some young chief with whom he might unite. On these occasions, six or a dozen young men would be tattooed at one time; and for these there might be four or five tattooers employed.

Tattooing is still kept up to some extent, and is a regular profession, just as house-building, and well paid. The custom is traced to Taēmā and Tilafainga; and they were worshipped by the tattooers as the presiding deities of their craft.

The instrument used in the operation is an oblong piece of human bone (*os ilium*), about an inch and a half broad and two inches long. A time of war and slaughter was a harvest for the tattooers to get a supply of instruments. The one end is cut like a small-toothed comb, and the other is fastened to a piece of cane, and looks like a little serrated adze. They dip it into a mixture of candle-nut ashes and water, and, tapping it with a little mallet, it sinks into the skin, and in this way they puncture the whole surface over which the tattooing extends. The greater part of the body, from the waist down to the knee is covered with it, variegated here and there with neat regular stripes of the untattooed skin, which when they are well oiled, make them appear in the distance as if they had on black silk knee-breeches. Behrens, in describing these natives in his narrative of Roggewein's voyage of 1772, says: "They were clothed from the waist downwards with fringes and a kind of silken stuff artificially wrought." A nearer inspection would have shown that the fringes were a bunch of red *ti* leaves (*Dracæna terminalis*) glistening with cocoa nut oil, and the "kind of silken stuff," the tattooing just described. As it extends over such a large surface the operation is a tedious and painful affair. After smarting and bleeding for awhile under the hands of the tattooers, the patience of the youth is exhausted. They then let him rest and heal for a time, and, before returning to him again, do a little piece on each of the party. In two or three months the whole is completed. The friends of the young men are all the while in attendance with food. They also bring quantities of fine mats and native cloth, as the hire of the tattooers; connected with them, too, are many waiting on for a share in the food and property.

Among the fellahs, as well as among the laboring people of the cities, the women tattoo their chin, their forehead, the middle of the breast, a portion of their hands and arms, as well as feet, with indelible marks of blue and green. In Upper Egypt most females puncture their lips to give them a dark bluish hue. See Featherman, Social Hist. of the Races of Mankind, V, 1881, p. 545.

Professor Brauns, of Halle, reports (Science, III, No. 50, p. 69) that among the Ainos of Yazo the women tattoo their chins to imitate the beards of the men.

The antiquity of tattooing in the eastern hemisphere is well established. With reference to the Hebrews, and the tribes surrounding them, the following Biblical texts may be in point:

"Ye shall not make any cuttings in your flesh for the dead, nor print any marks upon you." Lev., XIX, 28.

* * * "Though thou rentest thy face with painting, in vain shalt thou make thyself fair." Jer., IV, 30.

ARTIFICIAL OBJECTS.

The objects of this character, on which pictographs are found, may be mentioned as follows:

1. Lances.
2. Arrows.
3. Shields.
4. Canoes.
5. Paddles.
6. Habitations.
7. Utensils.
8. Pottery.
9. Sinews or thread.
10. Artificial beads.

It is believed that examples showing the use of each of these objects are presented in various parts of the present paper, but the following do not appear under other headings:

Many of the California tribes are expert workers in grass and roots in the manufacture of baskets, upon which designs are frequently worked, other than mere ornamentation, in geometric forms. The Yokuts, at Tule River Agency, in the southeastern part of the State, frequently incorporate various forms of the human body, in which the arms are suspended at the sides of the body with the hands directed outward to either side. Above the head is a heavy horizontal line. In the manufacture of these vessels grass is taken, carefully cleaned, and soaked, so as to become smooth and uniform in size.

Among the Thlinkit, boats as well as paddles are ornamented with painted figures, and the family coat of arms. See Bancroft's Native Races, etc., I, 106.

There is no need to give evidence concerning the designs upon pottery, after the numerous illustrations in the Second Annual Report of this Bureau, from Zuñi, etc.

MNEMONIC.

This has been the most apparent, and probably the most ancient, purpose for which pictographs have been made. It commenced by the use of material objects which afterwards were reproduced graphically in paintings, etchings, and carvings.

In the present paper many examples appear of objects known to have been so used, the graphic representations of which, made with the same purpose, are explained by knowledge of the fact. Other instances are mentioned as connected with the evolution of pictographs, and possibly to interpret some of the latter which are not yet understood.

The quipu of the Peruvians is one of the most instructive devices for the general aid of memory, and as applicable to a variety of subjects, also having value for comparison with and reference to all other objects of this character. A good account of the quipu, quoted from Travels in Peru, during the years 1838–1842, * * by Dr. J. J. von Tschudi [Wiley and Putnam's Library, Vols. XCIII–XCIV], New York, 1847, Pt. II, pp. 344, 345, is as follows:

THE QUIPU OF THE PERUVIANS.

The ancient Peruvians had no manuscript characters for single sounds; but they had a method by which they composed words and incorporated ideas. This method consisted in the dexterous intertwining of knots on strings, so as to render them auxiliaries to the memory. The instrument consisting of these strings and knots was called the QUIPU. It was composed of one thick head or top string, to which, at certain distances, thinner ones were fastened. The top string was much thicker than these pendent strings, and consisted of two doubly twisted threads, over which two single threads were wound. The branches, if I may apply the term to these pendent strings, were fastened to the top ones by a single loop; the knots were made in the pendent strings, and were either single or manifold. The length of the strings used in making the quipu were various. The transverse or top string often measures several yards, and sometimes only a foot long; the branches are seldom more than two feet long, and in general they are much shorter.

The strings were often of different colors; each having its own particular signification. The color for soldiers was red; for gold, yellow; for silver, white; for corn, green, &c. This writing by knots was especially employed for numerical and statistical tables; each single knot representing ten; each double knot stood for one hundred; each triple knot for one thousand, &c.; two single knots standing together made twenty; and two double knots, two hundred.

This method of calculation is still practiced by the shepherds of the Puna. They explained it to me, and I could, with very little trouble, construe their quipus. On the first branch or string they usually place the numbers of the bulls; on the second,

that of the cows; the latter being classed into those which were milked, and those which were not milked; on the next string were numbered the calves, according to their ages and sizes. Then came the sheep, in several subdivisions. Next followed the number of foxes killed, the quantity of salt consumed, and, finally, the cattle that had been slaughtered. Other quipus showed the produce of the herds in milk, cheese, wool, &c. Each list was distinguished by a particular color, or by some peculiarity in the twisting of the string.

In this manner the ancient Peruvians kept the accounts of their army. On one string were numbered the soldiers armed with slings; on another, the spearmen; on a third, those who carried clubs, &c. In the same manner the military reports were prepared. In every town some expert men were appointed to tie the knots of the quipu, and to explain them. These men were called *quipucamayocuna* (literally, officers of the knots). Imperfect as was this method, yet in the flourishing period of the Inca government the appointed officers had acquired great dexterity in unriddling the meaning of the knots. It, however, seldom happened that they had to read a quipu without some verbal commentary. Something was always required to be added if the quipu came from a distant province, to explain whether it related to the numbering of the population, to tributes, or to war, &c. Through long-continued practice, the officers who had charge of the quipus became so perfect in their duties that they could with facility communicate the laws and ordinances, and all the most important events of the kingdom, by their knots.

All attempts made in modern times to decipher Peruvian quipus have proved unsatisfactory in their results. The principal obstacle to deciphering those found in graves consists in the want of the oral communication requisite for pointing out the subjects to which they refer. Such communication was necessary, even in former times, to the most learned quipucamayocuna. Most of the quipus here alluded to seems to be accounts of the population of particular towns or provinces, tax-lists, and information relating to the property of the deceased. Some Indians in the southern provinces of Peru are understood to possess a perfect knowledge of some of the ancient quipus, from information transmitted to them from their ancestors. But they keep that knowledge profoundly secret, particularly from the whites.

That the general idea or invention for mnemonic purposes appearing in the quipus, was used pictorially is indicated in the illustrations given by Dr. S. Habel in The Sculptures of Santa Lucia Cosumalwhuapa in Guatemala, etc., Smithsonian Contributions to Knowledge, [No. 269], 1878, Vol. XXII, page 85. Upon these he remarks:

It has been frequently affirmed that the aborigines of America had nowhere arisen high enough in civilization to have characters for writing and numeral signs; but the sculptures of Santa Lucia exhibit signs which indicate a kind of cipher writing, higher in form than mere hieroglyphics. From the mouth of most of the human beings, living or dead, emanates a staff variously bent, to the sides of which nodes are attached. These nodes are of different sizes and shapes, and variously distributed on the sides of the staff, either singly or in twos and threes,—the last named either separated or in shape of a trefoil. This manner of writing not only indicates that the person is speaking, or praying, but also indicates the very words, the contents of the speech or prayer. It is quite certain that each staff, as bent and ornamented, stood for a well-known petition which the priest could read as easily as those acquainted with a cipher dispatch can know its purport. Further, one may be allowed to conjecture that the various curves of the staves served the purpose of strength and rhythm, just as the poet chooses his various meters for the same purpose.

In connection with the quipu, Dr. Hoffman reports a corresponding device among the Indians formerly inhabiting the mountain valleys north of Los Angeles, California, who frequently came to the settle-

ments to dispose of native blankets, skins, and robes. The man delegated by the tribe to carry away and sell these articles was provided with a number of strings, made of some flexible vegetable fiber, one string for each class of goods, which were attached to his belt. Every one contributing articles mentioned the prices to be asked therefor, and when the salesman disposed of a blanket the proper cord was taken, and a single knot was tied for each *real* received, or a double knot for each *peso*. Thus any particular string indicated the kind of goods disposed of, as well as the whole sum realized, which was finally distributed among the original contributors.

NOTCHED STICKS.

The use of these mnemonically was very frequent. A few instances only of this obvious expedient need be given.

The Dakotas formerly residing at Grand River Agency, the Hidatsa, and the Shoshoni from Idaho were observed to note the number of days during which they journeyed from one place to another, by cutting lines or notches upon a stick of wood.

The coup sticks carried by Dakota warriors are often found bearing a number of small notches, which refer to the number of individuals the owners may have hit after they had been shot or wounded.

The young men and boys of the several tribes at Fort Berthold, Dakota, frequently carry a stick, upon which they cut a notch for every bird killed during a single expedition.

Dr. Hoffman states that he found in the collection of the Hon. A. F. Coronel, of Los Angeles, California, a number of notched sticks, which had been invented and used by the Indians at the Mission of San Gabriel. The history of them is as follows: Immediately after the establishment of the mission the Franciscan father appointed major domos, who had under their charge corporals or overseers of the several classes of laborers, herders, etc. The chief herder was supplied with a stick of hard wood, measuring about one inch in thickness each way, and from twenty to twenty-four inches long. The corners were beveled at the handle. Upon each of these facets were marks to indicate the kinds of cattle herded, thus: one cut or notch, a bull; two cuts, a cow; one cross, a heifer; and a >-shaped character, an ox. Similar characters were also used for horses, respectively, for stallion, mare, colt, and gelding. Where only cattle were owned no difference was made in the upper end of the stick; but when both kinds of animals were owned near the same localities, or by the same settler, the stick referring to cattle was notched V-shaped at the head end, and reversed or pointed to denote horses. Sticks were also marked to denote the several kinds of stock, and to record those which had been branded. In all of these sticks numbers

were indicated by cutting notches into the corners, each tenth cut extending across the face of the stick. For instance, if the herder had thirteen oxen in charge, he selected that edge of the stick which bore upon the handle the >-shape, and cut nine short notches, one long one, and three short ones.

Labor sticks were also used by the Indians. On one side was a circle intersected with cross lines to denote *money*, and on the opposite side, which was reserved for time, either nothing or some character, according to the fancy of the owner. Short notches on the money side indicated *reals*, long cuts *pesos*. On the opposite side short cuts indicated days, and long cuts weeks.

For further reference to this subject, see Reliquiæ Aquitanicæ; etc., by Edouard Lartet and Henry Christy, * * London, 1875, p. 183 *et seq.*

ORDER OF SONGS.

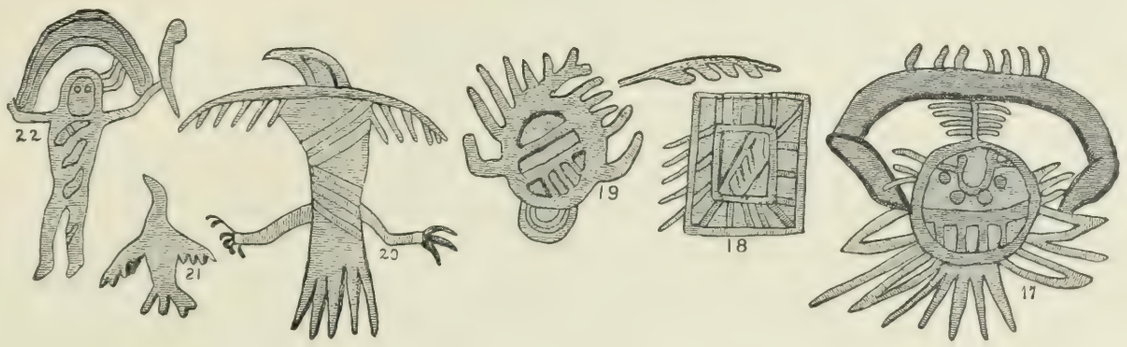
Many instances have been published in regard to the use of mnemonic characters to preserve the remembrance of songs. The words of these are invariable as well as the notes to which they are chanted. Both words and notes must have been previously memorized by the singers. Ideographic characters might give the general interpretation, but would not suggest the exact words.

Schoolcraft, I, 361, remarks: Sounds are no further preserved by these mnemonic signs, than is incident, more or less, to all pure figurative or representative pictures. The simple figure of a quadruped, a man, or a bird, recalls the *name* of a quadruped, a man or a bird. * * We may thus recall something of the living language from the oblivion of the past, by the pictorial method. Mnemonic symbols are thus at the threshold of the hieroglyphic.

One of the best examples of this mnemonic device is one of the Ojibwas, found in Schoolcraft, *op. cit.*, I, page 362 *et seq.*, and called by him Songs of the Meda. His illustration is reproduced as Plate IV, and his explanation, much condensed, is as follows:

No. 1. A medicine lodge filled with the presence of the Great Spirit, who, it is affirmed, came down with wings to instruct the Indians in these ceremonies. The meda, or priest, sings, "The Great Spirit's lodge—you have heard of it. I will enter it." While this is sung, and repeated, the priest shakes his shi-shi-gwun, and each member of the society holds up one hand in a beseeching manner. All stand, without dancing. The drum is not struck during this introductory chant.

No. 2. A candidate for admission crowned with feathers, and holding, suspended to his arm, an otter-skin pouch, with the wind represented as gushing out of one end. He sings, repeating after the priest, all dancing, with the accompaniment of the drum and rattle: * * "I have always loved that that I seek. I go into the new green leaf lodge."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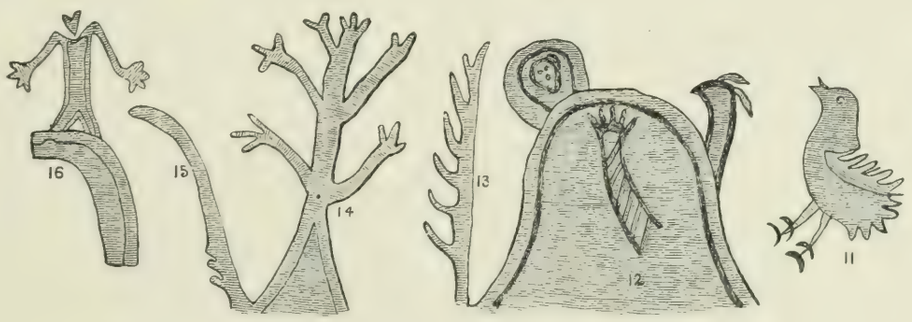
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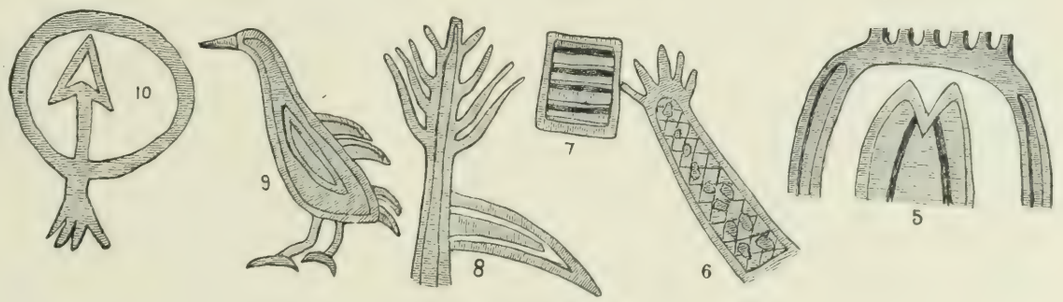
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No. 3 marks a pause, during which the victuals prepared for the feast are introduced.

No. 4. A man holding a dish in his hand, and decorated with magic feathers on his wrists, indicating his character as master of the feast. All sing, "I shall give you a share, my friend."

No. 5. A lodge apart from that in which the meda-men are assembled, having a vapor-bath within it. The elder men go into this lodge, and during the time of their taking the bath, or immediately preceding it, tell each other certain secrets relative to the arts they employ in the Medáwin. The six heavy marks at the top of the lodge indicate the steam escaping from the bath. There are three orders of men in this society, called 1. meda; 2. sangemau; and 3. ogemau. And it is in these secret exchanges of arts, or rather the communication of unknown secrets from the higher to the lower orders, that they are exalted from one to another degree. The priest sings, "I go into the bath—I blow my brother strong."

No. 6. The arm of the priest, or master of ceremonies, who conducts the candidate, represented in connection with the next figure.

No. 7. The goods, or presents given, as a fee of admission, by the novitiate. "I wish to wear this, my father, my friend."

No. 8. A meda-tree. The recurved projection from the trunk denotes the root that supplies the medicine. "What! my life, my single tree!—we dance around you."

No. 9. A stuffed crane-skin, employed as a medicine-bag. By shaking this in the dance, plovers and other small birds are made, by a sleight-of-hand trickery, to jump out of it. These, the novitiates are taught, spring from the bag by the strong power of the operator. This is one of the prime acts of the dance. "I wish them to appear—that that has grown—I wish them to appear."

No. 10. An arrow in the supposed circle of the sky. Represents a charmed arrow, which, by the power of the meda of the person owning it, is capable of penetrating the entire circle of the sky, and accomplishing the object for which it is shot out of the bow. "What are you saying, you mee dá man? This—this is the meda bone."

No. 11. The Ka Kaik, a species of small hawk, swift of wing, and capable of flying high into the sky. The skin of this bird is worn round the necks of warriors going into battle. "My kite's skin is fluttering."

No. 12. The sky, or celestial hemisphere, with the symbol of the Great Spirit looking over it. A Manito's arm is raised up from the earth in a supplicating posture. Birds of good omen are believed to be in the sky. "All round the circle of the sky I hear the Spirit's voice."

No. 13. The next figure denotes a pause in the ceremonies.

No. 14. A meda-tree. The idea represented is a tree animated by magic or spiritual power. "The Wabeno tree—it dances."

No. 15. A stick used to beat the Ta-wa-e-gun or drum. "How rings aloud the drum-stick's sound."

No. 16. Half of the celestial hemisphere—an Indian walking upon it. The idea symbolized is the sun pursuing his diurnal course till noon. "I walk upon half the sky."

No. 17. The Great Spirit filling all space with his beams, and enlightening the world by the halo of his head. He is here depicted as the god of thunder and lightning. "I sound all around the sky, that they can hear me."

No. 18. The Ta-wa-e-gun, or single-headed drum. "You shall hear the sound of my Ta wa-e-gun."

No. 19. The Ta-wa-e-gonse, or tambourine, ornamented with feathers, and a wing, indicative of its being prepared for a sacred use. "Do you understand my drum?"

No. 20. A raven. The skin and feathers of this bird are worn as head ornaments. "I sing the raven that has brave feathers."

No. 21. A crow, the wings and head of which are worn as a head-dress. "I am the crow—I am the crow—his skin is my body."

No. 22. A medicine lodge. A leader or master of the Meda society, standing with his drum stick raised, and holding in his hands the clouds and the celestial hemisphere. "I wish to go into your lodge—I go into your lodge."

In connection with this topic reference may be made to the Lenâpé and their Legends: with the complete text and symbols of The Walam Olum, by Daniel G. Brinton, A. M., M. D., Phila., 1885. 8 vo. pp. 262, with numerous illustrations.

TRADITIONS.

As an example of a chart used to assist in the exact repetition of traditions, Figure 38 is presented with the following explanation by Rev. J. Owen Dorsey:

"The chart accompanies a tradition chanted by members of a secret society of the Osage tribe. It was drawn by an Osage, Haḍa ɔüꞇse, Red Corn, who was adopted in childhood by a white man named Matthews; hence he is also known as Wm. P. Matthews, or "Bill Nix." He is one of the tribal lawyers. He obtained his version of the tradition from a member of his gens, Saḍekiɸĕ. Another version of the same tradition was obtained by him from Pahü-skă, White Hair, the chief of the Bald Eagle sub-gens of the Tsiɔu gens. ꓘahiꞇe waꞇaɣiñꞇe, Saucy Chief, gave me other parts of the tradition, which Haḍa ɔüꞇse had forgotten.

He also chanted a few lines of the tradition of the Waɔaɔe gens. Waɣüts'aꞇaɔĭ, of the Black Bear gens, told me a little of his tradition; and I obtained part of the Waɔaɔe tradition from Huɸakɸi^{n}, Good Voice, of the Mi^{n}k'i^{n} gens.

The tree at the top represents the tree of life. By this flows a river. The tree and the river are described later in the degrees. When a woman is initiated she is required by the head of her gens to take four sips of water (symbolizing the river), then he rubs cedar on the palms of his hands, with which he rubs her from head to foot. If she belongs to a gens on the left side of the tribal circle, her chief begins on the left side of her head, making three passes, and pronouncing the sacred name of Deity three times. Then he repeats the process from her forehead down; then on the right side of her head; then at the back of her head; four times three times, or twelve passes in all.

Beneath the river are the following objects: The Watse ꞯuꞰa, male slaying animal (?), or morning star, which is a red star. 2. Six stars called the "Elm rod" by the white people in the Indian Territory. 3. The evening star. 4. The little star. Beneath these are the moon, seven stars, and sun. Under the seven stars are the peace pipe and war hatchet, the latter is close to the sun, and the former and the moon are on the same side of the chart. Four parallel lines extending across the chart, represent four heavens or upper worlds through which the ancestors of the Tsiȣu people passed before they came to this earth. The lowest heaven rests on an oak tree: the ends of the others appear to be supported by pillars or ladders. The tradition, according to Saɗekiȼĕ, begins below the lowest heaven, on the left side of the chart, under the peace pipe. Each space on the pillar corresponds with a line of the chant; and each stanza (at the opening of the tradition) contains four lines. The first stanza precedes the arrival of the first heaven, pointing to a time when the children of the "former end" of the race were without human bodies as well as human souls. The bird hovering over the arch denotes an advance in the condition of the people; then they had human souls in the bodies of birds. Then followe d the progress from the fourth to the first heaven, followed by the descent to earth. The ascent to four heavens and the descent to three, makes up the number seven.

The tree on which the Tsiȣu was called pü-sü-hü, jack oak, or a sort of a red oak. When they alighted, it was on a beautiful day when the earth was covered with luxuriant vegetation. From that time the paths of the Osages separated; some marched on the right, being the war gentes, while those on the left were peace gentes, including the Tsiȣu, whose chart this is.

Then the Tsiȣu met the black bear, called Káxe-wáhü-saⁿ′ in the tradition. Káxe-wáhü-saⁿ′, Crow-bone-white in the distance. He offered to become their messenger, so they sent him to the different stars for aid. According to the chart he went to them in the following order: Morning star, sun, moon, seven stars, evening star, little star; but, according to the chant related, they were as follows: Watse ꞯuꞰa (morning star); Watse miⁿꞰa (female animal that slays another star); Haⁿ-paꞯaⁿ-Wakanꞯa (Wakanda or Deity during the day, the sun); Wa-

kanɬaha^{n} ɸiñkce (Deity of the night, moon); Mikak'e peɸŭ^{n}ɖa, Seven Stars; Ta adɸi^{n}, Three Deer; Mikak'e tañɤa, Big Star; Mikak'e ɔiñɤa, Little Star. Then the Black bear went to the Waɔiñɤa-ɔüɬse, a female red bird sitting on her nest. This grandmother granted his request. She gave them human bodies, making them out of her own body.

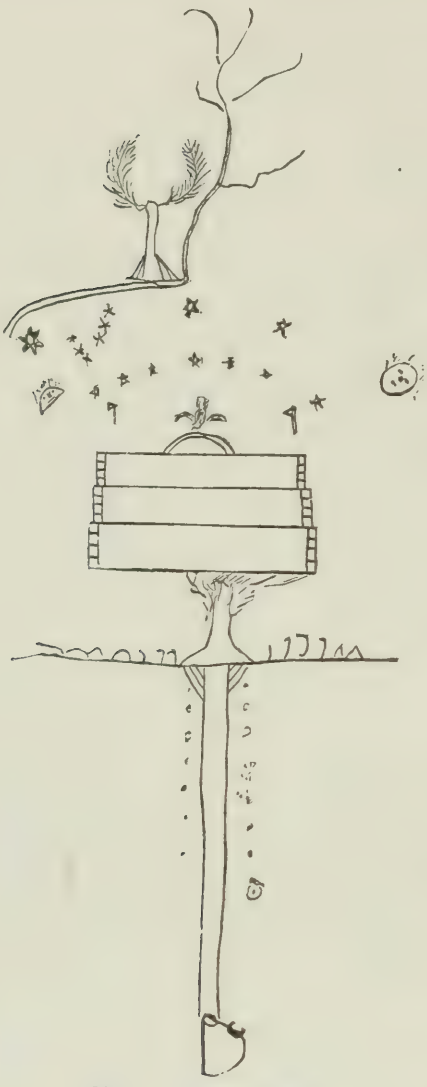


FIG. 38.—Osage chart.

The earth lodge at the end of the chart denotes the village of the Hañɤa utaɸa^{n}ɬsi, who were a very warlike people. Buffalo skulls were on the tops of the lodges, and the bones of the animals on which they subsisted, whitened on the ground. The very air was rendered offensive by the decaying bodies and offal. The Hañɤa utaɸa^{n}ɬsi made a treaty of peace with the Waɔace and Tsiɔu gentes, and from the union of the three resulted the present nation of the Osages.

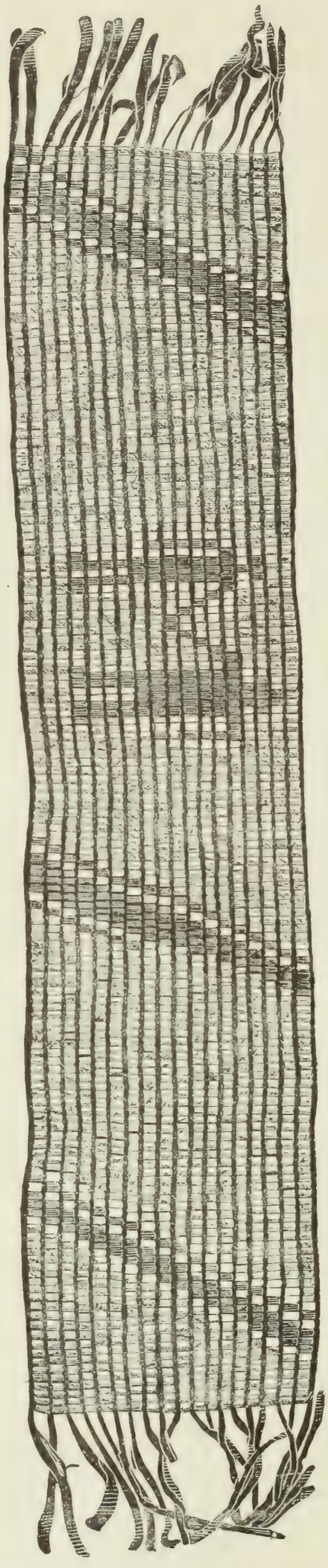
The Bald Eagle account of the tradition begins very abruptly. The stars were approached thus: Ha^{n}ɖaɬa^{n}-Wakanɬa (sun), Watse ɬuɤa (morning star), Waɖaha (Great Dipper), Tapa (Pleiades) Mikak'e-ha^{n}-ɖaɬa^{n} (Day Star). This version gives what is wanting in the other, the meeting of other gentes, Hañkā ɔiñɤa, Waɔaɔe, Hañɤa-utaɸa^{n}ɬsi, etc., and the decisions of the chief of the Hañɤa-utaɸa^{n}ɬsi.

The people on the war side had similar adventures, but the accurate account has not yet been obtained.

The whole of the chart was used mnemonically. Parts of it, such as the four heavens and ladders, were tattooed on the throat and chest of the old men belonging to the order."

TREATIES.

The most familiar example of the recording of treaties is the employment of wampum belts for that purpose. An authority on the subject says: "The wampum belts given to Sir William Johnson, of immortal Indian memory, were in several rows, black on each side, and white in the middle; the white being placed in the center was to express peace, and that the path between them was fair and open. In the center of the



PENN WAMPUM BELT.

belt was a figure of a diamond made of white wampum, which the Indians call the council fire." See Voyages and Travels of an Indian interpreter and trader, etc., by J. Long, London, 1791, p. 47.

More minute statements regarding wampum is made superfluous after its full discussion by Mr. W. H. Holmes in his work, "Art in Shell of the ancient Americans," in the Second Annual Report of the Bureau of Ethnology, pages 253 *et seq.* One of his illustrations specially in point for the present purpose is here reproduced in Plate V. His remarks upon it are as follows:

The remarkable belt shown has an extremely interesting, although a somewhat incomplete, history attached to it. It is believed to be the original belt delivered by the Leni-Lenape sachems to William Penn at the celebrated treaty under the elm tree at Shackamaxon in 1682. Although there is no documentary evidence to show that this identical belt was delivered on that occasion, it is conceded on all hands that it came into the possession of the great founder of Pennsylvania at some one of his treaties with the tribes that occupied the province ceded to him. Up to the year 1857 this belt remained in the keeping of the Penn family. In March, 1857, it was presented to the Pennsylvania Historical Society by Granville John Penn, a great-grandson of William Penn. Mr. Penn, in his speech on this occasion, states that there can be no doubt that this is the identical belt used at the treaty, and presents his views in the following language:

"In the first place, its dimensions are greater than of those used on more ordinary occasions, of which we have one still in our possession—this belt being composed of eighteen strings of wampum, which is a proof that it was the record of some very important negotiation. In the next place, in the center of the belt, which is of white wampum, are delineated in dark-colored beads, in a rude but graphic style, two figures—that of an Indian grasping with the hand of friendship the hand of a man evidently intended to be represented in the European costume, wearing a hat; which can only be interpreted as having reference to the treaty of peace and friendship which was then concluded between William Penn and the Indians, and recorded by them in their own simple but descriptive mode of expressing their meaning, by the employment of hieroglyphics. Then the fact of its having been preserved in the family of the founder from that period to the present time, having descended through three generations, gives an authenticity to the document which leaves no doubt of its genuineness; and as the chain and medal which were presented by the parliament to his father the admiral, for his naval services, have descended among the family archives unaccompanied by any written document, but is recorded on the journals of the House of Commons, equal authenticity may be claimed for the wampum belt confirmatory of the treaty made by his son with the Indians; which event is recorded on the page of history, though, like the older relic, it has been unaccompanied in its descent by any document in writing."

WAR.

Material objects were often employed in challenge to and declaration of war, some of which may assist in the interpretation of pictographs. A few instances are mentioned:

Arrows, to which long hairs are attached, were stuck up along the

trail or road, by the Florida Indians, to signify a declaration of war. See Captain Laudonnière in Hakluyt, III, 415.

Challenging by heralds obtained. Thus the Shumeias challenged the Ponios [in central California] by placing three little sticks, notched in the middle and at both ends, on a mound which marked the boundary between the two tribes. If the Ponios accept, they tie a string round the middle notch. Heralds then meet and arrange time and place, and the battle comes off as appointed. See Bancroft, Native Races, I, p. 379.

A few notices of the foreign use of material objects in connection with this branch of the subject may be given.

It appears in the Bible: Ezek., XXXVII, 16–20, and Numbers, XVII, 2.

Lieutenant-Colonel Woodthorp says (Jour. Anth. Inst. Gr. Brit., Vol. XLI, 1882, p. 211): "On the road to Niao we saw on the ground a curious mud figure of a man in slight relief presenting a gong in the direction of Senna; this was supposed to show that the Fiao men were willing to come to terms with Senna, then at war with Niao. Another mode of evincing a desire to turn away the wrath of an approaching enemy, and induce him to open negotiations, is to tie up in his path a couple of goats, sometimes also a gong, with the universal symbol of peace, a palm leaf planted in the ground hard by."

The Maori had neither the quipus nor wampum, but only a board shaped like a saw, which was called *he rakau whakapa-paranga*, or genealogical board; it was in fact a tally, having a notch for each name, and a blank space to denote where the male line failed and was succeeded by that of the female; youths were taught their genealogies by repeating the names of each to which the notches referred. See Te Ika a Maui.—Rev. Richard Taylor, London, 1870, p. 379.

TIME.

Dr. William H. Corbusier, assistant surgeon, U. S. Army, gives the following information:

The Dakotas make use of the circle as the symbol of a cycle of time; a small one for a year and a large one for a longer period of time, as a life-time, one old man. Also a round of lodges, or a cycle of 70 years, as

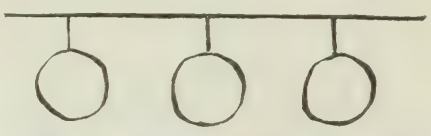


FIG. 39.—Device denoting succession of time. Dakota.

in Battiste Good's Winter Count. The continuance of time is sometimes indicated by a line extending in a direction from right to left across the page, when on paper, and the annual circles are suspended from the line at regular intervals by short lines, as in Figure 39, and the ideo-

PAINTED BY HENRY TILMAN

WANTLEY COURT ON

BUFFALO ROBE.

graph for the year is placed beneath each one. At other times the line is not continuous, but is interrupted at regular intervals by the yearly circle, as in Figure 40.

FIG. 40.—Device denoting succession of time. Dakota.

The large amount of space taken up by the Dakota Winter Counts, now following, renders it impracticable to devote more to the graphic devices regarding time. While these Winter Counts are properly under the present head, their value is not limited to it, as they suggest, if they do not explain, points relating to many other divisions of the present paper.

THE DAKOTA WINTER COUNTS.

The existence among the Dakota Indians of continuous designations of years, in the form of charts corresponding in part with the orderly arrangement of divisions of time termed calendars, was first made public by the present writer in a paper entitled "A Calendar of the Dakota Nation," which was issued in April, 1877, in Bulletin III, No. 1, of the United States Geological and Geographical Survey. Later consideration of the actual use of such charts by the Indians has induced the change of their title to that adopted by themselves, viz., Winter Counts, in the original, waníyetu wówapi.

The lithographed chart published with that paper, substantially the same as Plate VI, now presented, was ascertained to be the Winter Count used by or at least known to a large portion of the Dakota people, extending over the seventy-one years commencing with the winter of A. D. 1800–'01.

The copy from which the lithograph was taken is traced on a strip of cotton cloth, in size one yard square, which the characters almost entirely fill, and was made by Lieut. H. T. Reed, First United States Infantry, an accomplished officer of the present writer's former company and regiment, in two colors, black and red, used in the original, of which it is a *fac simile.*

The general design of the chart and the meaning of most of its characters were ascertained by Lieutenant Reed, at Fort Sully, Dakota, and afterwards at Fort Rice, Dakota, in November, 1876, by the present writer; while further investigation of records and authorities at Washington elicited additional details used in the publication mentioned and many more since its issue.

After exhibition of the copy to a number of military and civil officers connected with the Departments of War and of the Interior, it appeared that those who, from service on expeditions and surveys or from special study of American ethnology, were most familiar with

the Indian tribes west of the Mississippi, had never heard of this or any other similar attempt among them to establish a chronological system. Bragging biographies of chiefs and partisan histories of particular wars delineated in picture writing on hides or bark are very common. Nearly every traveler on the plains has obtained a painted robe, on which some aboriginal artist has stained rude signs purporting to represent tribal or personal occurrences, or often the family connections of the first owner. Some of these in the possession of the present writer have special significance and are mentioned under appropriate heads in the present work.

It is believed that, in the pictographs of all of these peoples discovered before the chart mentioned, the obvious intention was either historical or biographical, or more generally was to chronicle occurrences as such, and that there was not an apparent design to portray events selected without exclusive reference to their intrinsic interest or importance, but because they severally occurred within regular successive intervals of time, and to arrange them in an orderly form, specially convenient for use as a calendar and valuable for no other purpose.

The copy made by Lieutenant Reed was traced over a duplicate of the original, which latter was drawn on a buffalo robe by Lone-Dog, an aged Indian, belonging to the Yanktonai tribe of the Dakotas, who in the autumn of 1876 was near Fort Peck, Montana, and was reported to be still in his possession. His Dakota name is given him by correspondents who knew him, as in the ordinary English literation, Shunka-ishnala, the words respectively corresponding very nearly with the vocables in Riggs's lexicon for dog-lone. Others have, however, identified him as Chi-no-sa, translated as "a lone wanderer," and asserted that he was at the time mentioned with the hostile Dakotas under Sitting Bull. There appear to have been several Dakotas of the present generation known to the whites as Lone-Dog.

Plate VI is a representation of the chart as it would appear on the buffalo robe, but it is photographed from the copy on linen cloth, not directly from the robe.

The duplicate from which the copy was immediately taken was in the possession of Basil Clément, a half-breed interpreter, living at Little Bend, near Fort Sully, Dakota, who professed to have obtained information concerning the chart from personal inquiries of many Indians, and whose dictated translation of them, reduced to writing in his own words, forms the basis of that given in the present paper. The genuineness of the document was verified by separate examination, through another interpreter, of the most intelligent Indians accessible at Fort Rice, and at a considerable distance from Clément, who could have had no recent communication with those so examined. One of the latter, named Good-Wood, a Blackfoot Dakota and an enlisted scout attached to the garrison at Fort Rice, immediately recognized the copy now in possession of the writer as "the same thing Lone-Dog had," and also

stated that he had seen another copy at Standing Rock Agency in the hands of Blue-Thunder, a Blackfoot Dakota. He said it showed "something put down for every year about their nation." He knew how to use it as a calendar, beginning from the center and counting from right to left, and was familiar with the meaning of many of the later characters and the events they commemorated, in which he corroborated Clément's translation, but explained that he had forgotten the interpretation of some of the earlier signs, which were about those things done before his birth.

All the investigations that could be made elicited the following account, which, whether accurate or not, the Indians examined certainly believed: Probably with the counsel of the old men and authorities of his tribe, Lone-Dog ever since his youth has been in the habit of deciding upon some event or circumstance which should distinguish each year as it passed, and when such decision was made he marked what was considered to be its appropriate symbol or device upon a buffalo robe kept for the purpose. The robe was at convenient times exhibited to other Indians of the nation, who were thus taught the meaning and use of the signs as designating the several years, in order that at the death of the recorder the knowledge might not be lost. A similar motive as to the preservation of the record led to its duplication in 1870 or 1871, so that Clément obtained it in a form ending at that time. It was also reported by several Indians that other copies of the chart in its various past stages of formation had been known to exist among the several tribes, being probably kept for reference, Lone-Dog and his robe being so frequently inaccessible.

Although Lone-Dog was described as a very old Indian, it was not supposed that he was of sufficient age in the year 1800 to enter upon the duty as explained. Either there was a predecessor from whom he received the earlier records or obtained copies of them, or, his work being first undertaken when he had reached manhood, he gathered the traditions from his elders and worked back so far as he could do so accurately, the object either then or before being to establish some system of chronology for the use of the tribe, or more probably in the first instance for the use of his particular band.

Present knowledge of the Winter Count systems renders it improbable that Lone-Dog was their inventor or originator. They were evidently started, at the latest, before the present generation, and have been kept up by a number of independent recorders. The idea was one specially appropriate to the Indian genius, yet the peculiar mode of record was an invention, and is not probably a very old invention, as it has not, so far as known, spread beyond a definite district or been extensively adopted. If an invention of that character had been of great antiquity it would probably have spread by inter-tribal channels beyond the bands or tribes of the Dakotas, where alone the copies of such charts have been found and are understood. Yet the known ex-

istence of portable pictographs of this ascertained character renders it proper to examine rock etchings and other native records with reference to their possible interpretation as designating events chronologically.

A query is naturally suggested, whether intercourse with missionaries and other whites did not first give the Dakotas some idea of dates and awaken a sense of want in that direction. The fact that Lone-Dog's winter count, the only one known at the time of its first publication, begins at a date nearly coinciding with the first year of the present century by our computation, awakened a suspicion that it might be due to civilized intercourse, and was not a mere coincidence. If the influence of missionaries or traders started any plan of chronology, it is remarkable that they did not suggest one in some manner resembling the system so long and widely used, and the only one they knew, of counting in numbers from an era, such as the birth of Christ, the Hegira, the Ab Urbe Conditâ, the First Olympiad, and the like. But the chart shows nothing of this nature. The earliest character (the one in the center or beginning of the spiral) merely represents the killing of a small number of Dakotas by their enemies, an event of frequent occurrence, and neither so important nor interesting as many others of the seventy-one shown in the chart, more than one of which, indeed, might well have been selected as a notable fixed point before and after which simple arithmetical notation could have been used to mark the years. Instead of any plan that civilized advisers would naturally have introduced, the one actually adopted—to individualize each year by a specific recorded symbol, or totem, according to the decision of a competent person, or by common consent acted upon by a person charged with or undertaking the duty whereby confusion was prevented—should not suffer denial of its originality merely because it was ingenious, and showed more of scientific method than has often been attributed to the northern tribes of America. The ideographic record, being preserved and understood by many, could be used and referred to with sufficient ease and accuracy for ordinary purposes. Definite signs for the first appearance of the small-pox and for the first capture of wild horses may be dates as satisfactory to the Dakotas as the corresponding expressions A. D. 1802 and 1813 to the Christian world, and far more certain than much of the chronological tables of Regiomontanus and Archbishop Usher in terms of A. M. and B. C. The careful arrangement of distinctly separate characters in an outward spiral starting from a central point is a clever expedient to dispense with the use of numbers for noting the years, yet allowing every date to be determined by counting backward or forward from any other that might be known; and it seems unlikely that any such device, so different from that common among the white visitors, should have been prompted by them. The whole conception seems one strongly characteristic of the Indians, who in other instances have shown such expert-

ness in ideography. The discovery of the other charts presented or referred to in this paper, which differ in their times of commencement and ending from that of Lone-Dog and from each other, removed any inference arising from the above-mentioned coincidence in beginning with the present century.

Copies of the paper publishing and explaining Lone-Dog's record were widely circulated by the present writer among Army officers, Indian agents, missionaries, and other persons favorably situated, in hopes of obtaining other examples and further information. The result was a gratifying verification of all the important statements and suggestions in the publication, with the correction of some errors of detail and the supply of much additional material. The following copies of the chart, substantially the same as that of Lone-Dog, are now, or have been, in the possession of the present writer:

1. A chart made and kept by Bo-í-de, The-Flame (otherwise translated The-Blaze), who, in 1877, lived at Peoria Bottom, 18 miles south of Fort Sully, Dakota. He was a Dakota and had generally dwelt with the Sans Arcs, though it was reported that he was by birth one of the Two Kettles. The interpretation was obtained (it is understood originally at the instance of Lieutenant Maus, First United States Infantry) directly from The-Flame by Alex. Laravey, official interpreter at Fort Sully, in the month of April, 1877.

The fac-simile copy in the writer's possession, also made by Lieutenant Reed, is on a cotton cloth about a yard square and in black and red—thus far similar to his copy of Lone-Dog's chart, but the arrangement is wholly different. The character for the first year mentioned appears in the lower left-hand corner, and the record proceeds toward the right to the extremity of the cloth, then crossing toward the left and again toward the right at the edge of the cloth—and so throughout in the style called boustrophedon; and ending in the upper left-hand corner. The general effect is that of seven straight lines of figures, but those lines are distinctly connected at their extremities with others above and below, so that the continuous figure is serpentine. It thus answers the same purpose of orderly arrangement, allowing constant additions, like the more circular spiral of Lone-Dog. This record is for the years 1786–'7 to 1876–'7, thus commencing earlier and ending later than that of Lone-Dog.

2. The-Swan's chart was kindly furnished to the writer by Dr. Charles Rau, of the Smithsonian Institution. It was sent to him in 1872 by Dr. John R. Patrick, of Belleville, Saint Clair County, Illinois, who received it from Dr. Washington West, of Belleville, Illinois, who became an acting assistant surgeon, U. S. Army, November 2, 1868, and was assigned to duty at Cheyenne Agency, Dakota, established by General Harney, as one of a number of agencies to become useful as rendezvous for Dakotas to keep them from disturbing the line of the Union Pacific Railroad. He remained there from November, 1868, to May, 1870.

The agency was specially for the Two Kettles, Sans Arcs, and Minneconjous. A Minneconjou chief, The-Swan, elsewhere called The-Little-Swan, kept this record on the dressed skin of an antelope or deer, claiming that it had been preserved in his family for seventy years. The title of the written interpetation of this chart was called the History of the Minneconjou Dakotas, its true use not being then understood. In return for favors, Dr. West obtained permission to have some copies made on common domestic cotton cloth and employed an Indian expert of the Two Kettle band to do the work in fac-simile. From one of these he had a photograph taken on a small plate, and then enlarged in printing to about two-thirds of the original size and traced and touched up in India ink and red paint to match the original, which was executed in some black pigment and ruddle.

The characters are arranged in a spiral similar to those in Lone-Dog's chart, but more oblong in form. The course of the spiral is from left to right, not from right to left. The interpretation of this chart was made at Cheyenne Agency in 1868 for Dr. Washington West by Jean Premeau, interpreter at that agency.

A useful note is given in connection with the interpretation, that in it all the names are names given by the Minneconjous, and not the names the parties bear themselves, *e. g.*, in the interpretation for the year 1829–'30, (see Plate XVIII, and page 114,) Bad Arrow Indian is a translation of the Dakota name for a band of Blackfeet. The owner and explainer of this copy of the chart was a Minneconjou, and therefore his rendering of names might differ from that of another person equally familiar with the chart.

3. Another chart examined was kindly loaned to the writer by Brevet Maj. Joseph Bush, captain Twenty-second United States Infantry. It was procured by him in 1870 at the Cheyenne Agency, from James C. Robb, formerly Indian trader, and afterwards post trader. This copy is one yard by three-fourths of a yard, spiral, beginning in the center from right to left. The figures are substantially the same size as those in Lone-Dog's chart, with which it coincides in time, except that it ends at 1869–'70. The interpretation differs from that accompanying the latter in a few particulars.

4. The chart of Mato Sapa, Black-Bear. He was a Minneconjou warrior, residing in 1868 and 1869 on the Cheyenne Agency Reservation, on the Missouri River, near Fort Sully, Dakota, near the mouth of the Cheyenne River. In order to please Lieut. O. D. Ladley, Twenty-second United States Infantry, who was in charge of the reservation, he drew or copied on a piece of cotton cloth what he called, through the interpreter, the History of the Minneconjous, and also gave through the same interpreter the key or translation to the figures. Lieutenant Ladley loaned them to an ex-army friend in Washington, who brought them to the notice of the present writer.

This copy is on a smaller scale than that of Lone-Dog, being a flat and elongated spiral, 2 feet 6 inches by 1 foot 6 inches. The spiral reads from right to left. This chart, which begins as does that of Lone-Dog, ends with the years 1868–'69.

The present writer has had conversation and correspondence concerning other copies and other translated interpretations of what may be called for convenience and with some right, on account of priority in publication, the Lone-Dog system of winter counts. But it also was discovered that there were other systems in which the same pictographic method was adopted by the Dakotas. An account of the most important of these, viz.: the charts of Baptiste or Battiste Good, American-Horse, Cloud-Shield, and White-cow-killer has been communicated by Dr. William H. Corbusier, assistant surgeon, United States Army, and is presented *infra*, page 127, under the title of The Corbusier Winter Counts.

The study of all the charts, with their several interpretations, renders plain some points remaining in doubt while the Lone-Dog chart was the only example known. In the first place, it became clear that there was no fixed or uniform mode of exhibiting the order of continuity of the year-characters. They were arranged spirally or lineally, or in serpentine curves, by boustrophedon or direct, starting backward from the last year shown, or proceeding uniformly forward from the first year selected or remembered. Any mode that would accomplish the object of continuity with the means of regular addition seemed to be equally acceptable. So a theory advanced that there was some symbolism in the right to left circling of Lone-Dog's chart was aborted, especially when an obvious reproduction of that very chart was made by an Indian with the spiral reversed. It was also obvious that when copies were made, some of them probably from memory, there was no attempt at Chinese accuracy. It was enough to give the graphic or ideographic character, and frequently the character is better defined on one of the charts than on the others for the corresponding year. One interpretation or rather one translation of the interpretation would often throw light on the others. It also appeared that while different events were selected by the recorders of the different systems, there was sometimes a selection of the same event for the same year and sometimes for the next, such as would be natural in the progress of a famine or epidemic, or as an event gradually became known over a vast territory. To exhibit these points more clearly, the characters on the charts of The-Flame, Lone-Dog, and The-Swan have been placed together on Plates VII–XXXIII, and their interpretations, separately obtained and translated, have also been collated, commencing on page 100. Where any information was supplied by the charts of Mato Sapa or of Major Bush and their interpretation, or by other authorities, it is given in connection with the appropriate year. Reference is also made to some coincidences or explanatory manner noticed in the Corbusier system.

With regard to the Lone-Dog system, with which the present writer is more familiar, and upon which he has examined a large number of Indians during the last eight years, an attempt was made to ascertain whether the occurrences selected and represented were those peculiar to the clan or tribe of the recorder or were either of general concern or of notoriety throughout the Dakota tribes. This would tend to determine whether the undertaking was of a merely individual nature, limited by personal knowledge or special interests, or whether the scope was general. All inquiries led to the latter supposition. The persons examined were of different tribes, and far apart from each other, yet all knew what the document was, *i. e.*, that "some one thing was put down for each year;" that it was the work of Lone-Dog, and that he was the only one who "could do it," or perhaps was authority for it. The internal evidence is to the same effect. All the symbols indicate what was done, experienced, or observed by the nation at large or by its tribes without distinction—not by that of which Lone-Dog is a member, no special feat of the Yanktonais, indeed, being mentioned—and the chiefs whose deaths or deeds are noted appear to have belonged indifferently to the several tribes, whose villages were generally at great distance each from the other and from that of the recorder. It is, however, true that the Minneconjous were more familiar than other of the Dakotas with the interpretation of the characters on Lone-Dog's chart, and that a considerable proportion of the events selected relate to that division of the confederacy.

In considering the extent to which Lone-Dog's chart is understood and used among his people, it may be mentioned that the writer has never shown it to an intelligent Dakota of full years who has not known what it was for, and many of them knew a large part of the years portrayed. When there was less knowledge, there was the amount that may be likened to that of an uneducated person or child who is examined about a map of the United States, which had been shown to him before, with some explanation only partially apprehended or remembered. He would tell that it was a map of the United States; would probably be able to point out with some accuracy the State or city where he lived; perhaps the capital of the country; probably the names of the States of peculiar position or shape, such as Maine, Delaware, or Florida. So the Indian examined would often point out in Lone-Dog's chart the year in which he was born or that in which his father died, or in which there was some occurrence that had strongly impressed him, but which had no relation whatever to the character for the year in question. It had been pointed out to him before, and he had remembered it, though not the remainder of the chart.

With the interpretations of the several charts given below some explanations are furnished, but it may be useful to set forth in advance a few facts relating to the nomenclature and divisions of the tribes frequently mentioned. In the literature on the subject the great linguistic

stock or family embracing not only the Sioux or Dakotas proper, but the Missouris, Omahas, Ponkas, Osages, Kansas, Otos, Assiniboines, Gros Ventres or Minnitaris, Crows, Iowas, Mandans, and some others, has been frequently styled the Dakota Family. Major Powell, the Director of the Bureau of Ethnology, from considerations of priority, has lately adopted the name Siouan for the family, and for the grand division of it popularly called Sioux has used the term Dakota, which the people claim for themselves. In this general respect it is possible to conform in this paper to Major Powell's classification, but, specially in the details of the Winter Counts, the form of the titles of the tribes is that which is generally used, but with little consistency, in literature, and is not given with the accurate philologic literation of special scholars, or with reference to the synonomy determined by Major Powell, but not yet published. The reason for this temporary abandonment of scientific accuracy is that another course would require the correction or annotation of the whole material contributed from many sources, and would be cumbrous as well as confusing prior to the publication, by the Bureau of Ethnology, of the synonomy mentioned.

The word "Dakota" is translated in Riggs's Dictionary of that language as "leagued, or allied." Dr. J. Hammond Trumbull, the distinguished ethnographer and glossologist, gives the meaning to be more precisely "associated as comrades," the root being found in other dialects of the same group of languages for instance, in the Minitari, where *dáki* is the name for the clan or band, and *dakóe* means friend or comrade. In the Sioux (Dakota) dialect, *cota* or *coda* means friend, and Dakota may, literally translated, signify "our friends."

The title Sioux, which is indignantly repudiated by the nation, is either the last syllable or the two last syllables, according to pronunciation, of "Nadowesioux," which is the French plural of the Algonkin name for the Dakotas, "Nadowessi," "enemy," though the English word is not so strong as the Indian, "hated foe" being nearer. The Chippeways called an Iroquois "Nadowi," which is also their name for rattlesnake (or, as others translate, adder); in the plural, Nadowek. A Sioux they called Nadowessi, which is the same word with a contemptuous or diminutive termination; plural, Nadowessiwak or Nadawessyak. The French gave the name their own form of the plural, and the voyageurs and trappers cut it down to "Sioux."

The more important of existing tribes and organized bands into which the nation is now divided are given below, being the dislocated remains of the "Seven Great Council Fires," not only famed in tradition, but known to early white pioneers:

Yankton and Yanktonai or Ihañkto^{n}wa^{n}, both derived from a root meaning "at the end," alluding to the former locality of their villages.

Sihasapa, or Blackfeet.

Oheno^{n}pa, or Two Kettles.

Itaziptco, Without Bow. The French translation, Sans Arc, is, however, more commonly used.

Minneconjou, translated Those who plant by the water, the physical features of their old home.

Sitcaⁿgu, Burnt Hip or Brulé.

Santee, subdivided into Wahpeton, Men among Leaves, *i. e.*, forests, and Sisseton, Men of Prairie Marsh. Two other bands, now practically extinct, formerly belonged to the Santee, or, as it is more correctly spelled, Isanti tribe, from the root *Issan*, knife. Their former territory furnished the material for stone knives, from the manufacture of which they were called the "knife people."

Ogallalla, Ogalala, or Oglala. The meaning and derivation of this name, as well as the one next mentioned (Uncpapa), have been the subjects of much controversy.

Uncpapa, Unkpapa, or Hunkpapa, the most warlike and probably the most powerful of all the bands, though not the largest.

Hale, Gallatin, and Riggs designate a "Titon tribe" as located west of the Missouri, and as much the largest division of the Dakotas, the latter authority subdividing into the Sichangu, Itazipcho, Sihasapa, Minneconjou, Ohenoⁿpa, Ogallalla, and Huncpapa, seven of the tribes specified above, which he calls bands. The fact probably is that "Titon" (from the word *tiⁿtan*, meaning, "at or on land without trees, or prairie") was the name of a tribe, but it is now only an expression for all those tribes whose ranges are on the prairie, and that it has become a territorial and accidental, not a tribular distinction. One of the Dakotas at Fort Rice spoke to the writer of the "hostiles" as "Titons," with obviously the same idea of locality, "away on the prairie;" it being well known that they were a conglomeration from several tribes.

It is proper here to remark that throughout the charts the totem of the clan of the person indicated is not generally given, though it is often used in other kinds of records, but instead, a pictorial representation of his name, which their selection of proper names rendered practicable. The clans are divisions relating to consanguinity, and neither coincide with the political tribal organizations nor are limited by them. The number of the clans, or distinctive totemic groups, of the Dakota is less than that of their organized bands, if not of their tribes, and considerably less than that of the totems appearing on the charts. Although it has been contended that the clan-totem alone was used by Indians, there are many other specimens of picture-writings among the Dakota where the name-totem appears, notably the set of fifty-five drawings in the library of the Army Medical Museum narrating the deeds of Sitting-Bull. A pictured message lately sent by a Dakota at Fort Rice to another at a distant agency, and making the same use of name-signs, came to the writer's notice. Captain Carver, who spent a considerable time with these Indians (called by him Nadowessies) in 1766–'77, explains that "besides the name of the animal by which every nation or tribe [clan]

is denominated, there are others that are personal, which the children receive from their mother. * * * The chiefs are distinguished by a name that has either some reference to their abilities or to the hieroglyphic of their families, and these are acquired after they have arrived at the age of manhood. Such as have signalized themselves either in their war or hunting parties, or are possessed of some eminent qualification, receive a name that serves to perpetuate the fame of their actions or to make their abilities conspicuous." The common use of these name-signs appears in their being affixed to old treaties, and also to some petitions in the office of Indian Affairs. Their similarity in character, use, and actual design, either with or without clan designation, affords an instructive comparison with the origin of heraldry and of modern surnames. Further remarks about the name system of Indians appear on page 169.

With reference to the Winter Counts, it is well known that the Dakotas count their years by winters (which is quite natural, that season in their high levels and latitudes practically lasting more than six months), and say a man is so many snows old, or that so many snow seasons have passed since an occurrence. They have no division of time into weeks, and their months are absolutely lunar, only twelve, however, being designated, which receive their names upon the recurrence of some prominent physical phenomenon. For example, the period partly embraced by February is intended to be the "raccoon moon"; March, the "sore-eye moon"; and April, that "in which the geese lay eggs." As the appearance of raccoons after hibernation, the causes inducing inflamed eyes, and oviposition by geese vary with the meteorological character of each year, and as the twelve lunations reckoned do not bring back the point in the season when counting commenced, there is often dispute in the Dakota tipis toward the end of winter as to the correct current date. In careful examination of the several Counts it does not appear to be clear whether the event portrayed occurred in the winter months or was selected in the months immediately before or in those immediately after the winter. No regularity or accuracy is noticed in these particulars.

The next following pages give the translated interpretation of the above-mentioned charts of The-Flame, designated as No. I; of Lone-Dog, designated as No. II; and of The-Swan as No. III; and are explanations of Plates VII to XXXIII. As The-Flame's count began before the other two and ended later than those, Plates VII, VIII, and XXXIII are confined to that count, the others showing the three in connection. The red color frequently mentioned appears in the corresponding figures in Plate VI of Lone-Dog's chart as reproduced, but black takes its place in the series of plates now under consideration. Mention of the charts of Mato Sapa and of Major Bush is made where there seems to be any additional information or suggestion in them. When those charts are not mentioned they agree with that of Lone-Dog.

Reference is also made to the counts in the Corbusier system when correspondence is to be noted.

1786–'87.—No. I represents an Uncpapa chief who wore an "iron" shield over his head. It is stated that he was a great warrior, killed by the Rees. This word is abbreviated from the word Arikaree, a corrupt form of Arikara. This year in the Anno Domini style is ascertained by counting back from several well-known historical events corresponding with those on the charts.

Battiste Good's count for the same year says: "Iron-hand-band-went-on-war-path winter," and adds, "They formerly carried burdens on their backs hung from a band passed across their forehead. This man had a band of iron which is shown on his head."

1787–'88.—No. I. A clown, well known to the Indians; a mischief-maker. A Minneconjou. The interpreter could not learn how he was connected with this year. His accoutrements are fantastic. The character is explained by Battiste Good's winter count for the same year as follows:

"Left-the-heyoka-man-behind winter." A certain man was heyoka, that is, in a peculiar frame of mind, and went about the village bedecked with feathers singing to himself, and, while so, joined a war party. On sighting the enemy the party fled, and called to him to turn back also, but as he was heyoka, he construed everything that was said to him as meaning the very opposite, and, therefore, instead of turning back he went forward and was killed. The interpreter remarked if they had only had sense enough to tell him to go on, he would then have run away, but the idiots talked to him just as if he had been an ordinary mortal, and, of course, were responsible for his death.

The figure by Battiste Good strongly resembles that in this chart, giving indications of fantastic dress with the bow. The independent explanations of this figure and of some on the next page referring to dates so remote have been of interest to the present writer.

1788–'89.—No. I. Very severe winter and much suffering among the Indians. Crows were frozen to death, which is a rare occurrence. Hence the figure of the crow.

Battiste Good says: "Many-crows-died winter."

Cloud Shield says: The winter was so cold that many crows froze to death.

White-Cow-Killer calls the preceding year, 1787–'88, "Many-black-crows-died winter."

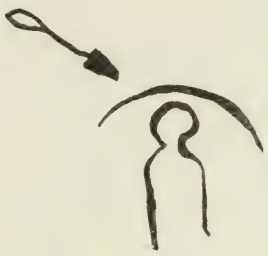
For the year 1789–'90, American-Horse says: "The cold was so intense that crows froze in the air and dropped dead near the lodges."

This is an instance of where three sets of accounts refer to the same severe cold, apparently to three successive years; it may really not have been three successive years, but that all charts referred to the same season, the fractions of years not being regarded, as above explained.

1786–'87.

1787–'88.

I



1788–'89.

1789–'90.

1790–'91.

I

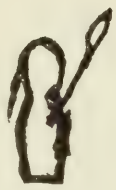
1791–'92.

1792–'93.

I

1793–'94. 1794–'95.

I

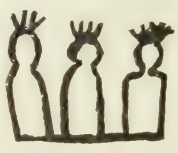


1795–'96. 1796–'97. 1797–'98.

I

1798–'99. 1799–1800.

I



1789–'90.—No. I. Two Mandans killed by Minneconjous. The peculiar arrangement of the hair distinguishes the tribe.

The Mandans were in the last century one of the most numerous and civilized tribes of the Siouan stock. Lewis and Clarke, in 1804, say that the Mandans settled forty years before, *i. e.*, 1764, in nine villages, 80 miles below their then site (north of Knife River), seven villages on the west, and two on the east side of the Missouri. Two villages, being destroyed by the small-pox and the Dakotas, united and moved up opposite to the Arickaras, who probably occupied the same site as exhibited in the counts for the year 1823–'24.

Battiste Good says: "Killed-two-Gros-Ventres-on-the ice winter."

1790–'91.—No. I. The first United States flag in the country brought by United States troops. So said the interpreter. No special occasion or expedition is noted.

Battiste Good says: "Carried-flag-about-with-them winter," and explains; they went to all the surrounding tribes with the flag, but for what purpose is unknown.

White-Cow-Killer says: "All-the-Indians-sēe-the-flag winter."

1791–'92.—No. I. A Mandan and a Dakota met in the middle of the Missouri; each swimming half way across, they shook hands, and made peace.

Mulligan, post interpreter at Fort Buford, says that this was at Fort Berthold, and is an historic fact; also that the same Mandan, long afterwards, killed the same Dakota.

Cloud-Shield says: The Sioux and Omahas made peace.

1792–'93.—No. I. Dakotas and Rees meet in camp together, and are at peace.

The two styles of dwellings, viz., the tipi of the Dakotas, and the earth lodge of the Arickaras, are apparently depicted.

Battiste Good says: "Camp-near-the-Gros-Ventres winter," and adds: "They were engaged in a constant warfare during this time." The Gros Ventres' dirt-lodge, with the entry in front, is depicted in Battiste Good's figure, and on its roof is the head of a Gros Ventre.

See Cloud-Shields's explanations of his figure for this year, page 133.

1793–'94.—No. I. Thin-Face, a noted Dakota chief, was killed by Rees.

Battiste Good says: "Killed-a-long-haired-man-at-Raw-Hide-Butte winter," adding that the Dakotas attacked a village of fifty-eight lodges, of a tribe [called by a correspondent the Cheyennes], and killed every soul in it. After the fight they found the body of a man whose hair was done up with deer-hide in large rolls, and on cutting them open, found it was all real hair, very thick, and as long as a lodge-pole. (Mem.: Catlin tells of a Crow called Long-Hair, whose hair, by actual measurement, was 10 feet 7 inches long.) The fight was at Raw-Hide Butte, now so-called by the whites, which they named Buffalo-Hide Butte because they found so many buffalo hides in the lodges.

According to Cloud-Shield, Long-Hair was killed in 1786–'87; and,

according to American-Horse, Long-Hair (a Cheyenne) was killed in 1796–'97.

White-Cow-Killer says: "Little-Face-kill winter."

Battiste Good says in his count for the succeeding year, 1794–'95, "Killed-little-face-Pawnee winter." The Pawnee's face was long, flat, and narrow like a man's hand, but he had the body of a large man.

1794–'95—No. 1. A Mandan chief killed a noted Dakota chief with remarkably long hair, and took his scalp.

White-Cow-Killer says: "Long-Hair-killed winter."

1795–'96—No. I. While surrounded by the enemy (Mandans) a Blackfeet Dakota Indian goes at the risk of his life for water for the party.

The interpreter states that this was near the present Cheyenne Agency, Dakota Territory. In the original character there is a bloody wound at the shoulder showing that the heroic Indian was wounded. He is shown bearing a water vessel.

Battiste Good gives a figure for this year recognizably the same as that in The-Flame's chart, but with a different explanation. He calls it "The Rees-stood-the-frozen-man-up-with-the-buffalo stomach-in-his-hand winter," and adds: "The body of a Dakota who had been killed in an encounter with the Rees, and had been left behind, froze. The Rees dragged it into their village, propped it up with a stick, and hung a buffalo stomach filled with ice in one hand to make sport of it. The buffalo stomach was in common use at that time as a water-jug."

White-Cow Killer calls it "Water-stomach-killed winter."

1796–'97—No. I. A Mandan chief, "The-Man-with the-Hat," becomes noted as a warrior. The character is precisely the same as that often given for white man. Some error in the interpretation is suggested in the absence of knowledge whether there actually was a Mandan chief so named, in which case the pictograph would be consistent.

Battiste Good says: "Wears-the-war-bonnet-died winter," adding: He did not die this winter, but received a wound in the abdomen from which the arrow head could not be extracted, but he died of the belly-ache years after.

White-Cow-Killer says: "War-Bonnet-killed winter."

The translated expression, "killed," has been noticed to refer often to a fatal wound, though the death did not take place immediately.

1797–'98.—No. I. A Ree woman is killed by a Dakota while gathering "pomme-blanche," a root used for food. Pomme-blanche, or Navet de prairie, is a white root somewhat similar in appearance to a white turnip, botanically *Psoralea esculenta* (Nuttal), sometimes *P. argophylla.* It is a favorite food of the Indians, eaten boiled down to a sort of mush or hominy. A forked stick is used in gathering these roots.

It will be noticed that this simple statement about the death of the Arikara woman is changed by other recorders or interpreters into one of a mythical character.

	1800-'01.	1801-'02.	1802-'03.
I			
II			
III			

Battiste Good says: "Took-the-god-woman-captive winter," adding: a Dakota war party captured a woman of a tribe unknown, who, in order to gain their respect, cried out, "I am a 'Waukan-Tanka' woman," meaning that she feared or belonged to God, the Great Spirit, whereupon they let her go unharmed.

A note is added: This is the origin of their name for God [Waka^{n}-Tañka], the Great Holy, or Supernatural One, they having never heard of a Supreme Being, but had offered their prayers to the sun, earth, and many other objects, believing they were endowed with spirits.

White-Cow-Killer says: "Caught-a-medicine-god-woman winter."

1798–'99.—No. I. Blackfeet Dakotas kill three Rees.

1799–1800.—No. I. Uncpapas kill two Rees. The figure over the heads of the two Rees is a bow, showing the mode of death. The hair of the Arickaras in this and the preceding character is represented in the same manner.

1800–'01.—No. I. Thirty-one Dakotas killed by Crows.

No. II. Thirty Dakotas were killed by Crow Indians.

The device consists of thirty parallel black lines in three columns, the outer lines being united. In this chart, such black lines always signify the death of Dakotas killed by their enemies.

The Absaroka or Crow tribe, although classed by ethnographers as belonging to the Siouan family, has nearly always been at war with the Dakotas proper since the whites have had any knowledge of either. The official tables of 1875 give the number of Crows then living as 4,200. They are tall, well-made, bold, and noted for the extraordinary length of their hair.

No. III. Thirty Dakotas killed by the Gros Ventres Indians between Forts Berthold and Union, Dakota.

Mato Sapa's record has nine inside strokes in three rows, the interpretation being that thirty Dakotas were killed by Gros Ventres between Forts Berthold and Union, Dakota.

Major Bush says the same, adding that it was near the present site of Fort Buford.

1801–'02.—No. I. Many died of small-pox.

No. II. The small pox broke out in the nation. The device is the head and body of a man covered with red blotches.

No. III. All the Dakotas had the small-pox very bad; fatal.

Battiste Good's record says: "Small-pox-used-them-up-again winter."

White-Cow-Killer says: "All-sick winter."

Major Bush adds "very badly" to "small-pox broke out."

1802–'03.—No. I. First shod horses seen by Indians.

No. II. A Dakota stole horses with shoes on, *i. e.*, stole them either directly from the whites or from some other Indians who had before obtained them from whites, as the Indians never shoe their horses. The device is a horseshoe.

No. III. Blackfeet Dakotas stole some American horses having shoes on. Horseshoes seen for the first time.

Mato Sapa says: Blackfeet Dakota stole American horses with shoes on, then first seen by them.

Major Bush agrees with Mato Sapa.

White-Cow-Killer calls it "Brought-in-horseshoes winter."

Battiste Good says: "Brought-home-Pawnee-horses-with-iron-shoes-on winter."

1803–'04.—No. I. A Blackfeet steals many curly horses from the Assinaboines.

No. II. They stole some "curly horses" from the Crows. Some of these horses are still seen on the plains, the hair growing in closely-curling tufts, resembling in texture the negro's woolly pile. The device is a horse with black marks for the tufts. The Crows are known to have been early in the possession of horses.

No. III. Uncpapa Dakotas stole five woolly horses from the Ree Indians.

White-Cow-Killer calls it "Plenty-woolly-horses winter."

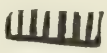
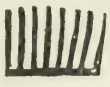
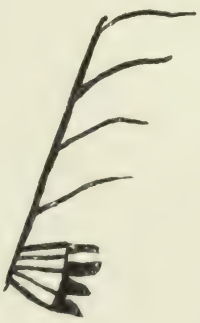
Mato Sapa says: Uncpapa stole from the Rees five horses having curly hair.

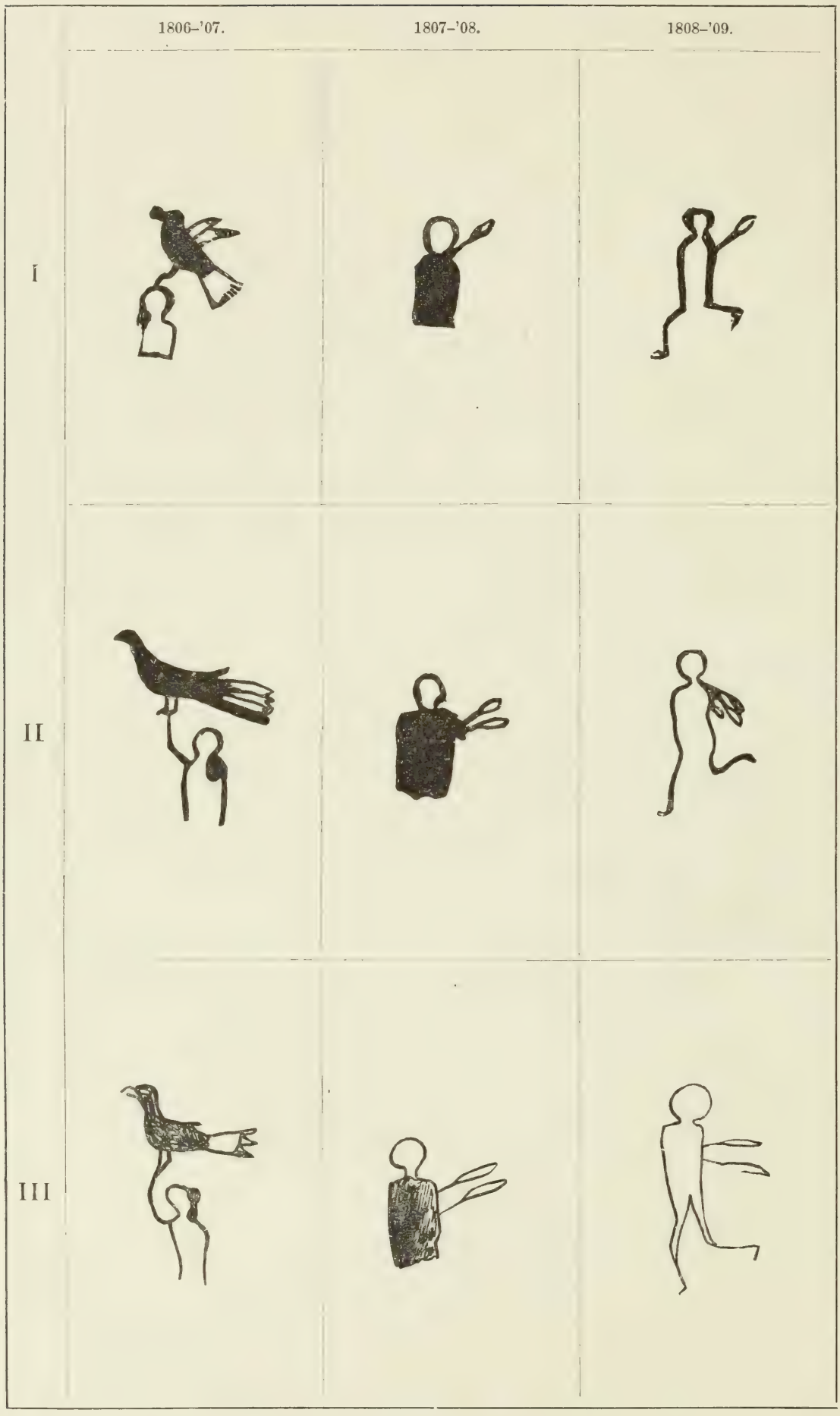
Major Bush same as last, using "woolly" instead of "curly."

Battiste Good says: "Brought-home-Pawnee-horses-with-their-hair-rough-and-curly winter."

1804–'05.—No. I. Calumet dance. Tall-Mandan born.

No. II. The Dakotas had a calumet dance and then went to war. The device is a long pipe-stem, ornamented with feathers and streamers. The feathers are white, with black tips, evidently the tail feathers of the adult golden eagle (*Aquila chrysaëtos*), highly prized by all Indians. The streamers anciently were colored strips of skin or flexible bark; now gayly colored strips of cloth are used. The word calumet is a corruption of the French *chalumeau*, and the pipe among all the Mississippi tribes was a symbol of peace. Captain Carver, in his Three Years' Travels Through the Interior Parts of North America, Philadelphia, 1796, which travels began in 1766, after puzzling over the etymology of the word calumet (that honest "captain of Provincial troops" obviously not understanding French), reports it as "about 4 feet long, bowl of red marble, stem of a light wood curiously painted with hieroglyphics in various colors and adorned with feathers. Every nation has a different method of decorating these pipes and can tell at once to what band it belongs. It is used as an introduction to all treaties, also as a flag of truce is among Europeans." The event commemorated in the figure was probably a council of some of the various tribes of the nation for settlement of all internal difficulties, so as to act unitedly against the common enemy. J. C. Beltrami, who visited the Dakotas not long after this date, describes them in his Pilgrimage, London, 1828, as divided into independent tribes, managing their separate affairs

	1803–'04.	1804–'05.	1805–'06.
I			
II			
III			



THE DAKOTA WINTER COUNTS.

each by its own council, and sometimes coming into conflict with each other, but uniting in a general council on occasions affecting the whole nation.

No. III. Danced calumet dance before going to war.

Battiste Good says: "Sung-over-each-other-while-on-the-war-path winter." He adds: "The war party while out made a large pipe and sang each other's praises." A memorandum is also added that the pipe here seems to indicate peace made with some other tribe assisting in the war. But see pages 118 and 139.

1805–'06.—No. I. Eight Dakotas killed by Crows.

No. II. The Crows killed eight Dakotas. Again the short parallel black lines, this time eight in number, united by a long stroke. The interpreter, Fielder, says that this character with black strokes is only used for grave marks.

No. III. Eight Minneconjou Dakotas killed by Crow Indians at the mouth of Powder River.

Battiste Good says: "They-came-and-killed-eight winter." The enemy killed eight Dakotas.

White-Cow-Killer calls it "Eight-Dakotas-killed winter."

Mato Sapa says: Eight Minneconjous killed by Crows at mouth of Powder River.

Major Bush same as last.

1806–'07.—No. I. Many eagles caught. This is done by digging a hole and baiting the eagles to the hole in which the Indian is concealed, who then catches the eagle.

No. II. A Dakota killed an Arikara as he was about to shoot an eagle. The sign gives the head and shoulders of a man with a red spot of blood on his neck, an arm being extended, with a line drawn to a golden eagle. The Arickaras, a branch of the Pawnee (Pani) family, were at the date given a powerful body, divided into ten large bands. They migrated in recent times from southeast to northwest along the Missouri River.

No. III. A Ree Indian hunting eagles from a hole in the ground killed by the Two Kettle Dakotas.

Battiste Good says: "Killed-them-while-hunting-eagles winter." Some Dakota eagle-hunters were killed by enemies.

White-Cow-Killer calls it "Killed-while-hunting-eagles winter."

Mato Sapa says: A Ree hunting eagles from a hole in the ground was killed by Two Kettles.

Major Bush says the same without the words "hole in the ground."

There is no doubt that the drawing represents an Indian in the act of catching an eagle by the legs, as the Arickaras were accustomed to catch eagles in their earth-traps. They rarely or never shot war eagles. The enemies probably shot the Arikara in his trap just as he put his hand up to grasp the bird.

1807–'08.—No. I. Red-Shirt killed by Rees.

No. II. Red-Coat, a chief, was killed. The figure shows the red coat pierced by two arrows, with blood dropping from the wounds.

No. III. Uncpapa Dakota, named Red-Shirt, killed by Ree Indians.

Battiste Good says: "Came and-killed-man-with-red-shirt-on winter."

White-Cow-Killer calls it "Red-shirt-killed winter."

Mato Sapa says: Red-shirt, an Uncpapa Dakota, was killed by Rees.

Major Bush same as last.

1808–'09.—No. I. Broken-Leg (Dakota) killed by Rees.

No. II. The Dakota who had killed the Ree shown in this record for 1806–'07 was himself killed by the Rees. He is represented running, and shot with two arrows; blood dripping. These two figures, taken in connection, afford a good illustration of the method pursued in the chart, which was not intended to be a continuous history, or even to record the most important event of each year, but to exhibit some one of special peculiarity. War then raging between the Dakotas and several tribes, probably many on both sides were killed in each of the years; but there was some incident about the one Ree who was shot as in fancied security he was bringing down an eagle, and whose death was avenged by his brethren the second year afterward. Hence the selection of those occurrences. It would, indeed, have been impossible to have graphically distinguished the many battles, treaties, horse-stealings, big hunts, etc., so most of them were omitted and other events of greater individuality and better adapted for portrayal were taken for the calendar, the criterion being not that they were of national moment, but that they were of general notoriety, or perhaps of special interest to the recorders.

No. III. A Blackfeet Dakota, named Broken-Leg, killed by Ree Indians. dians.

Mato Sapa says: Broken-Leg, a Blackfeet Dakota, was killed by Rees.

Major Bush same as last.

1809–'10.—No. I. Little-Beaver, a white trapper, is burnt to death by accident in his house on the White River. He was liked by Indians.

No. II. A chief, Little-Beaver, set fire to a trading store, and was killed. The character is simply his name-totem. The other interpretations say that he was a white man, but he probably had gained a new name among the Indians.

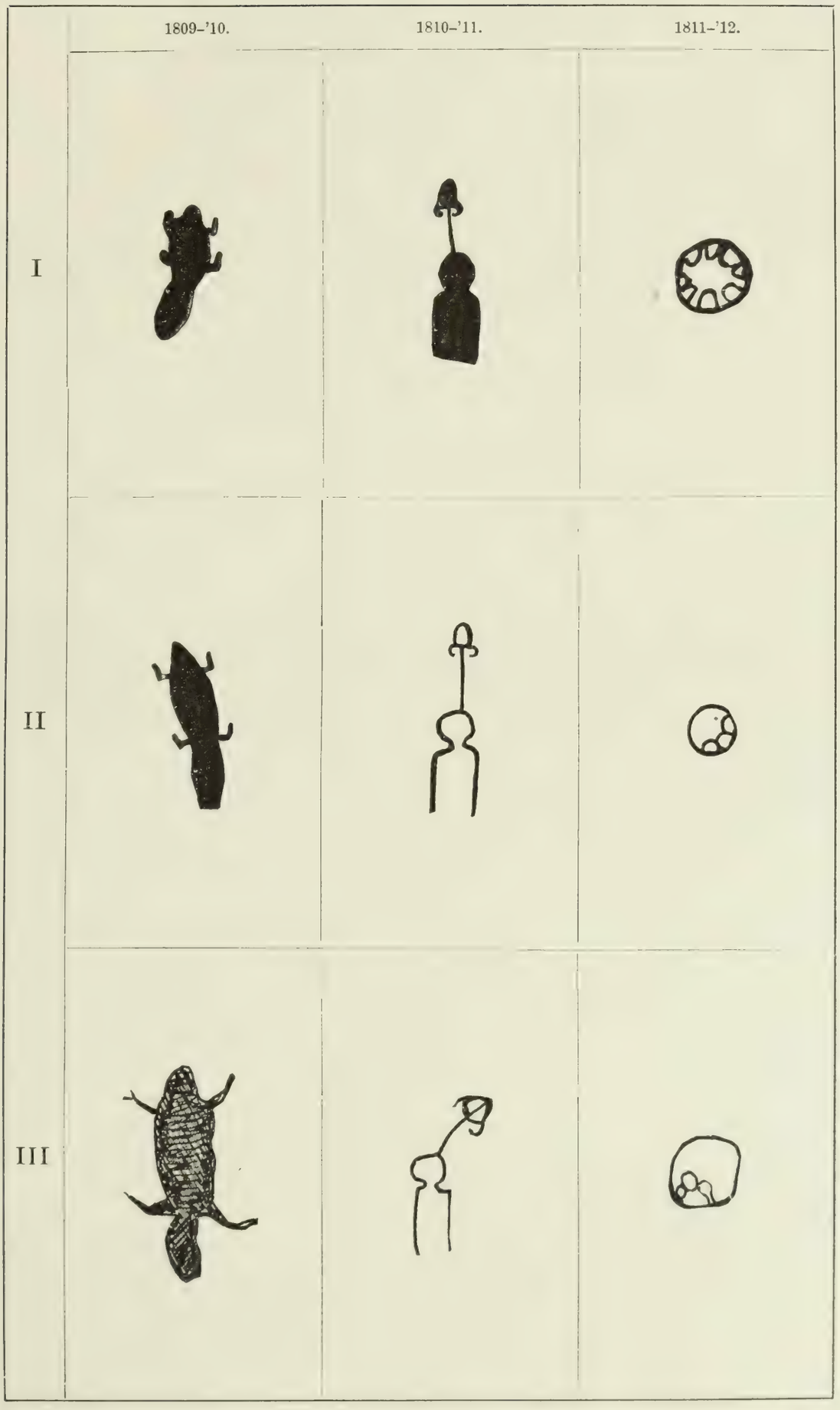
No. III. White French trader, called Little-Beaver, was blown up by powder on the Little Missouri River.

Battiste Good says: "Little-Beaver's-house-burned winter." Little-Beaver was an English trader, and his trading house was a log one.

White-Cow-Killer says: Little-Beaver's house was burned.

1810–'11.—No. I. Black-Rock, a Minneconjou chief, killed. See page 135.

No. II. Black-Stone made medicine. The "medicine men" have no connection with therapeutics, feel no pulses, and administer no drugs, or, if sometimes they direct the internal or external use of some secret preparation, it is as a part of superstitious ceremonies, and with main reli-



THE DAKOTA WINTER COUNTS.

ance upon those ceremonies they "put forth the charm of woven paces and of waving hands," utter wild cries, and muddle in blood and filth until they sometimes work themselves into an epileptic condition. Their incantations are not only to drive away disease, but for many other purposes, such as to obtain success in war, avert calamity, and very frequently to bring within reach the buffalo, on which the Dakotas depended for food. The rites are those known as Shamanism, noticeable in the ethnic periods of savagery and barbarism. In the ceremonial of "making medicine," a buffalo head, and especially that of an albino, held a prominent place among the plains tribes. Many references to this are to be found in the Prince of Wied's Travels in the interior of North America; London, 1843; also see *infra*, pages 118, 122 and 195.

The device in the chart is the man-figure, with the head of an albino buffalo held over his own.

No. III. A Minneconjou Dakota, named Little-Tail, first made "medicine" with white buffalo cow-skin.

Mato Sapa says: A Minneconjou, named Little-Tail, first made medicine with white buffalo cow-skin.

Major Bush same as last.

American-Horse gives for the preceding year, 1809–'10: Black-Rock was killed by the Crows.

1811–'12.—No. I. Twenty-seven Mandans surrounded and killed by Dakotas.

No. II. The Dakotas fought a battle with the Gros Ventres, and killed a great many. Device, a circle inclosing three round objects with flat bases, resembling heads severed from trunks, which latter the copy shows too minute in this device for suggestion of what they probably represent; but they appear more distinct in the record for 1864–'65 as the heads of enemies slain in battle. In the sign-language of the plains, the Dakotas are always denoted by drawing a hand across the throat, signifying that they cut the throats of their enemies. The Dakotas count by the fingers, as is common to most peoples, but with a peculiarity of their own. When they have gone over the fingers and thumbs of both hands, one finger is temporarily turned down for *one ten*. At the end of the next ten another finger is turned, and so on to a hundred. *Opawinge* [*Opawiⁿxe*], one hundred, is derived from *pawinga* [*pawiⁿxa*], to go around in circles, to make gyrations, and contains the idea that the round of all the fingers has again been made for their respective tens. So the circle is never used for less than one hundred, but sometimes signifies an indefinite number greater than a hundred. The circle, in this instance, therefore, was at first believed to express the killing in battle of many enemies. But the other interpretations remove all symbolic character, leaving the circle simply as the rude drawing of a dirt lodge, being an instance in which the present writer, by no means devoted to symbolism, had supposed a legitimate symbol to be indicated, which supposition full information on the subject did not support.

There are two wholly distinct tribes called by the Canadians Gros Ventres. One, known also as Hidatsa and Minnetari, is classed in the Siouan family, and numbered, in 1804, according to Lewis and Clarke, 2,500 souls. The other "Big Bellies," properly called Atsina, are the northern division of the Arapahos, an Algonkin tribe, from which they separated in the early part of this century, and, wandering eastward, met the Dakotas, by whom they were driven off to the north. It is probable that this is the conflict recorded, though the Dakotas have also often been at feud with their linguistic cousins, the Minnetari.

No. III. Twenty of the Gros Ventres killed by Dakotas in a dirt lodge. They were chased into a deserted Ree dirt lodge and killed there.

Mato Sapa says: Twenty Gros Ventres were killed by the Dakotas in a dirt lodge. In this record there is a circle with only one head.

Major Bush's interpretation is the same as the last.

1812–'13.—No. I. Many wild horses caught.

No. II. The wild horses were first run and caught by the Dakotas. The device is a lasso. The date is of value, as showing when the herds of prairie horses, descended from those animals introduced by the Spaniards in Mexico, or those deposited by them on the shores of Texas and at other points, had multiplied so as to extend into the far northern regions. The Dakotas undoubtedly learned the use of the horse and perhaps also that of the lasso from southern tribes, with whom they were in contact; and it is noteworthy that notwithstanding the tenacity with which they generally adhere to ancient customs, in only two generations since they became familiar with the horse they have been so revolutionized in their habits as to be utterly helpless, both in war and the chase, when deprived of that animal.

No. III. Dakotas first used lariat (*sic*) for catching wild horses.

Battiste Good says for the preceding year, 1811–'12: "First-hunted-horses winter." He adds: "The Dakotas caught wild horses in the sand-hills with braided lariats."

American-Horse also, for 1811–'12, says: They caught many wild horses south of the Platte River.

White-Cow-Killer calls 1811–'12 "Catching-wild-horses winter."

Major Bush says: Dakotas first made use of lariat in catching wild horses.

1813–'14—No. I. Many Indians died of cold (consumption).

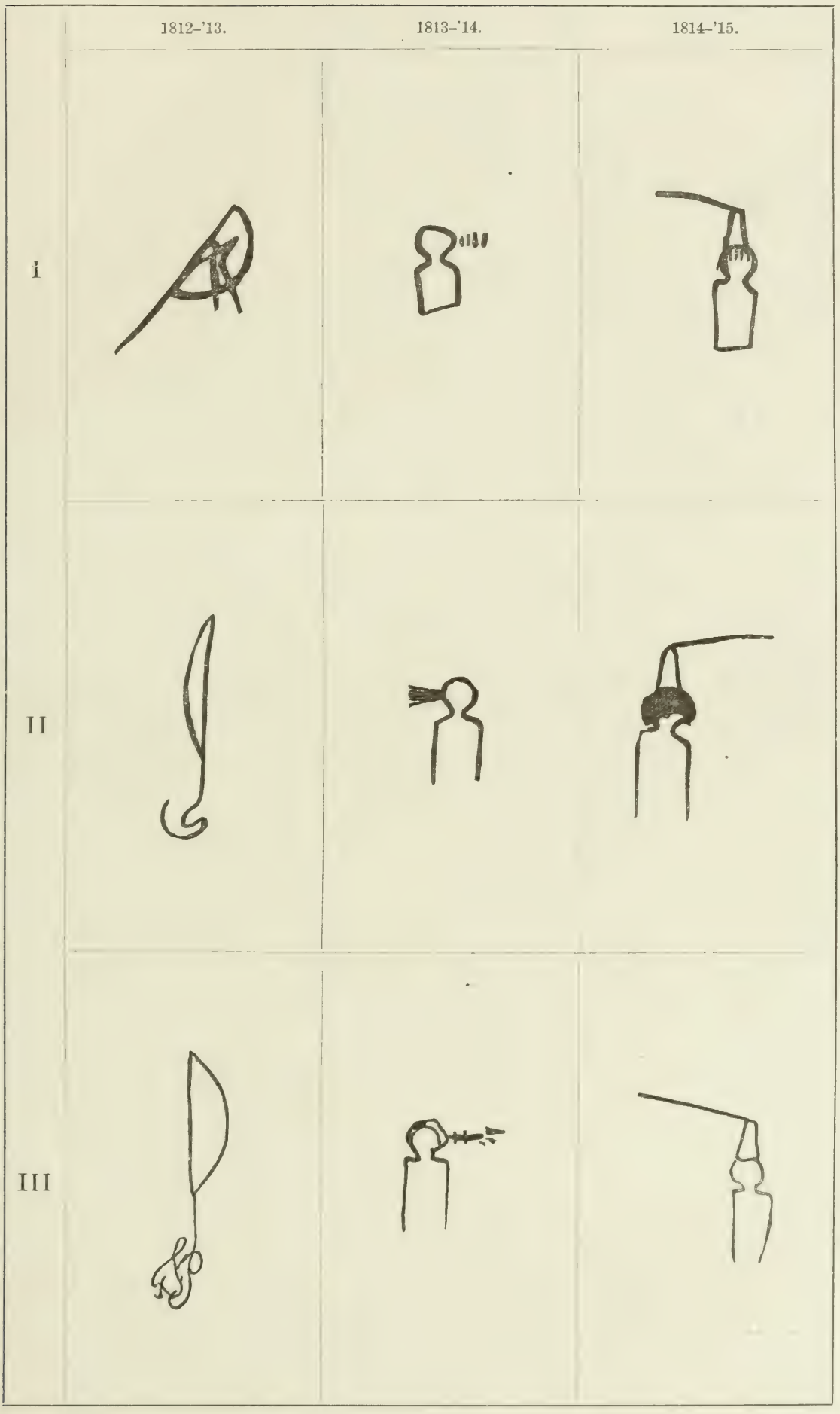
No. II. The whooping-cough was very prevalent and fatal. The sign is ludicrously suggestive of a blast of air coughed out by the man-figure.

No. III. Dakotas had whooping-cough, very fatal.

The interruption in the cough is curiously designed. An attempt at the same thing is made in Chart 1, and a less marked attempt appears in No. II.

1814–'15—No. I. Hunchback, a Brulé, killed by Utes.

No. II. A Dakota killed an Arapaho in his lodge. The device repre-



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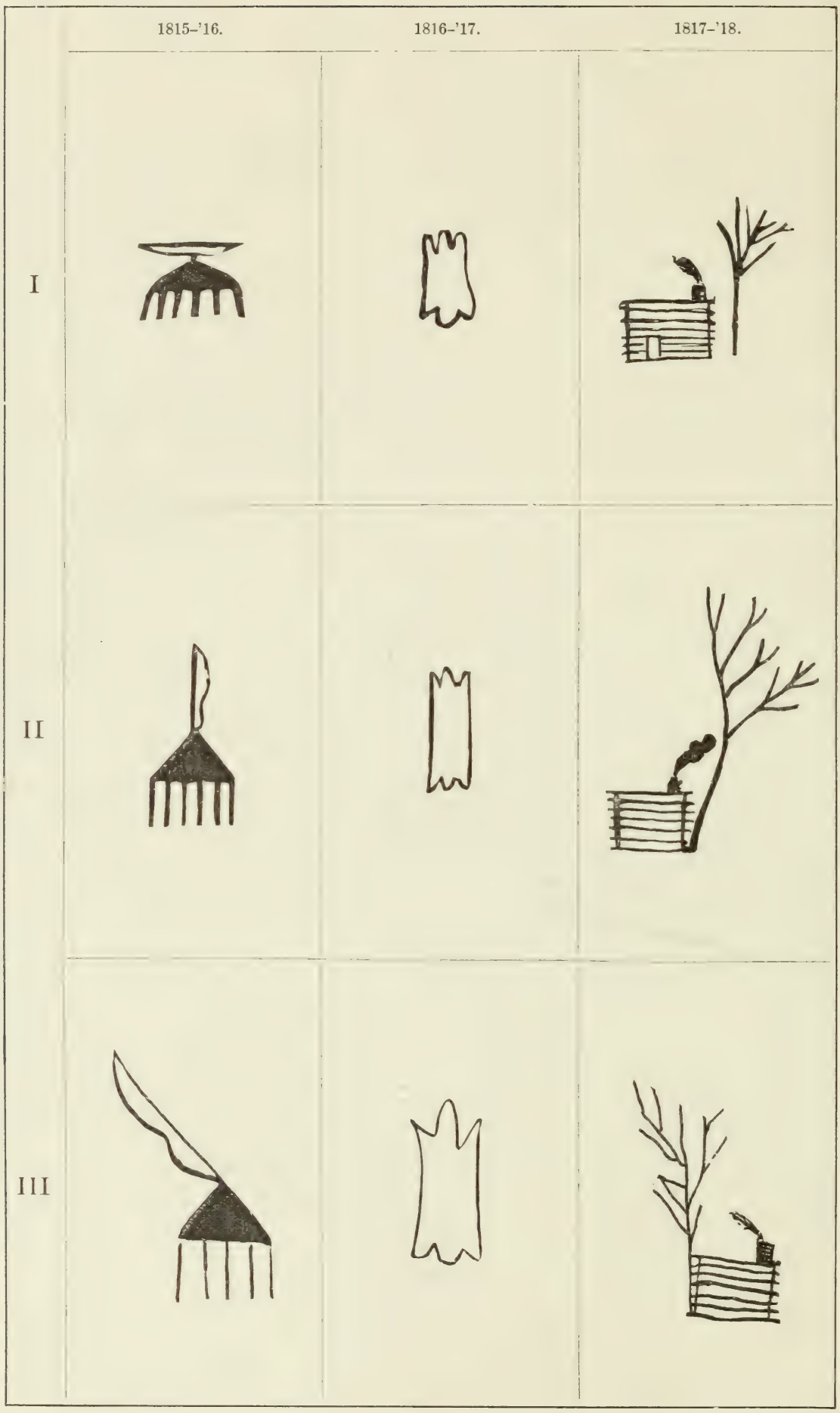


THE DAKOTA WINTER COUNTS.

sents a tomahawk or battle-ax, the red being blood from the cleft skull.

The Arapahos long dwelt near the head-waters of the Arkansas and Platte Rivers, and in 1822 numbered by report 10,000.

No. III. A Wetapahata (a stranger Indian, whose nationality was not identified by the interpreter) Indian killed by a Brulé Dakota, while on a visit to the Dakota.

Mato Sapa says: a Wetopahata Indian was killed by a Brulé Sioux while on a visit to the Dakotas.

Major Bush says the same, but spells the word Watahpahata.

Riggs gives Wí-ta-pa-ha, the Kiowas, and Ma-qpí-ya-to, the Arapahos, in the Dakota Dictionary.

1815–'16.—No. I. Large dirt lodge made by Sans Arcs. The figure at the top of the lodge is a bow.

No. II. The Sans Arcs made the first attempt at a dirt lodge. This was at Peoria Bottom, Dakota Territory. Crow-Feather was their chief, which fact, in the absence of the other charts, seemed to explain the fairly-drawn feather of that bird protruding from the lodge top, but the figure must now be admitted to be a badly drawn bow, in allusion to the tribe Sans Arc, without, however, any sign of negation. As the interpreter explained the figure to be a crow feather, and as Crow-Feather actually was the chief, Lone-Dog's chart with its interpretation may be independently correct.

No. III. Sans Arc Dakotas built dirt lodges at Peoria Bottom. A dirt lodge is considered a permanent habitation. The mark on top of the lodge is evidently a strung bow, not a feather.

Battiste Good says: "The-Sans-Arcs-made-large-house winter."

White-Cow-Killer calls it: "Made-a-house winter."

Major Bush's copy also shows a clearly drawn figure of a bow, strung.

1816–'17.—No. I. Buffalo very plenty.

No. II. "Buffalo belly was plenty." The device rudely portrays a side or perhaps hide of buffalo.

No. III. Dakotas had unusual quantities of buffalo.

1817–'18.—No. I. Trading store built at Fort Pierre.

No. II. La Framboise, a Canadian, built a trading store with dry timber. The dryness is shown by the dead tree. La Framboise was an old trader among the Dakotas. He once established himself in the Minnesota Valley. His name is mentioned by various travelers.

No. III. Trading post built on the Missouri River 10 miles above Fort Thompson.

Battiste Good says: "Chozé-built-a-house-of-dead-logs winter."

Mato Sapa says: A trading house was built on the Missouri River 10 miles above Fort Thompson.

Major Bush says the same as last, but that it was built by Louis La Conte.

1818–'19.—No. I. Many Indians died of cholera [*sic*].

No. II. The measles broke out and many died. The device in the copy is the same as that for 1801–'02, relating to the small-pox, except a very slight difference in the red blotches; and though Lone Dog's artistic skill might not have been sufficient to distinctly vary the appearance of the two patients, both diseases being eruptive, still it is one of the few serious defects in the chart that the sign for the two years is so nearly identical that, separated from the continuous record, there would be confusion between them. Treating the document as a mere *aide-de-mémoire*, no inconvenience would arise, it probably being well known that the small-pox epidemic preceded that of the measles; but such care is generally taken to make some, however minute, distinction between the characters, that possibly the figures on Lone-Dog's robe show a more marked difference between the spots indicating the two eruptions than is reproduced in the copy. It is also to be noticed that the Indian diagnosis makes little distinction between small-pox and measles, so that no important pictographic variation could be expected. The head of this figure is clearly distinguished from that in 1801–'02.

No. III. All the Dakotas had measles, very fatal.

Battiste Good says: "Small-pox-used-them-up-again winter." They at this time lived on the Little White River, about 20 miles above the Rosebud Agency. The character in Battiste Good's chart is presented here in Figure 41, as a variant from those in the plates.

FIG. 41.—Measles or small-pox.

Cloud-Shield says: Many died of the small-pox.

White-Cow-Killer calls it "Little-small-pox winter."

In Mato Sapa's drawing the head of the figure is distinguished from that of 1801–'02.

1819–'20.—No. I. Another trading store built.

No. II. Another trading store was built; this time by Louis La Conte, at Fort Pierre, Dakota. His timber, as one of the Indians consulted specially mentioned, was rotten.

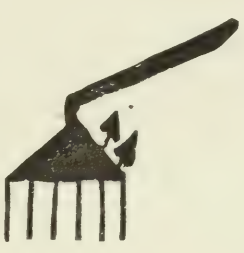
No. III. Trading post built on the Missouri River above Farm Island (near Fort Pierre).

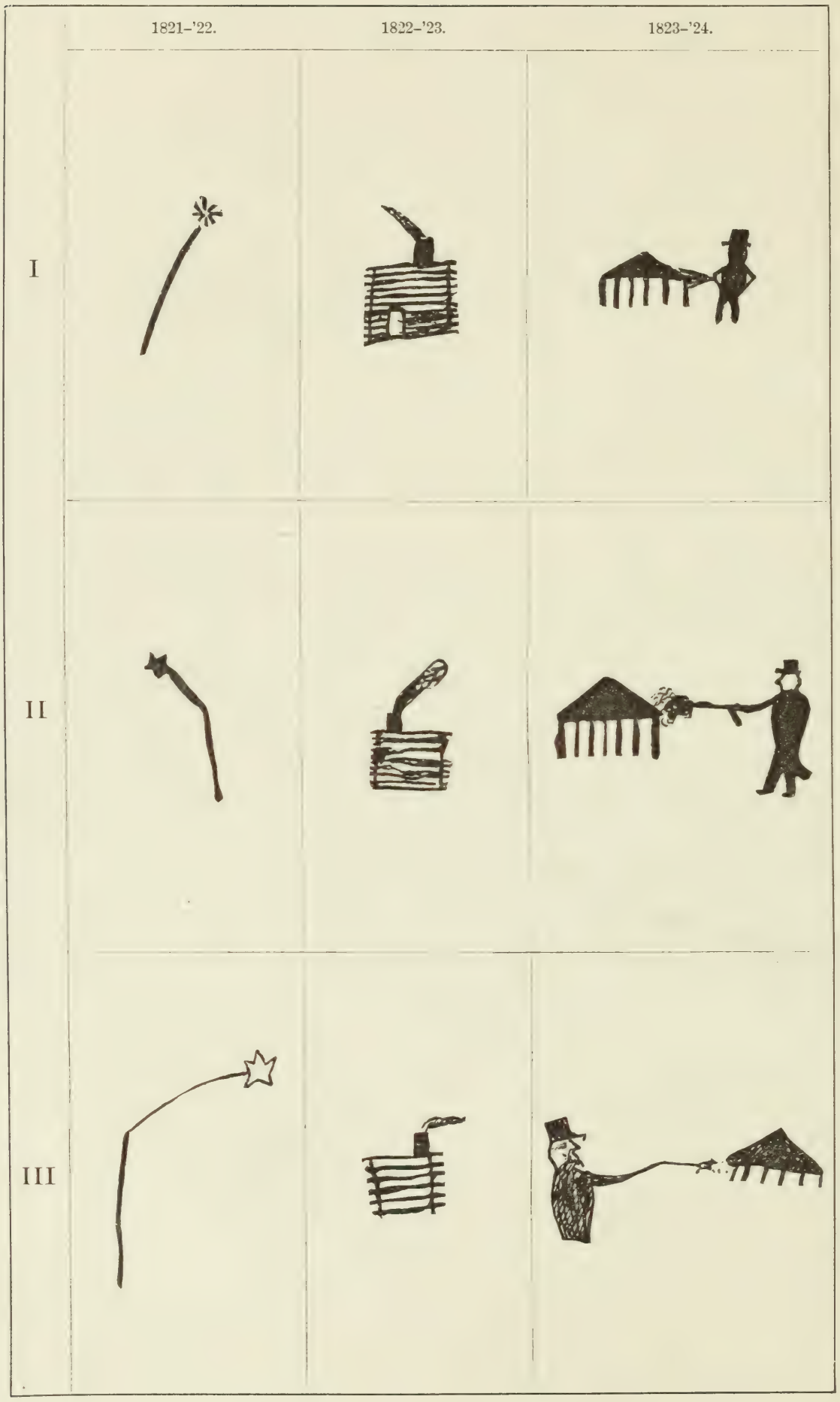
Battiste Good says: "Chozé-built-a-house-of-rotten-wood winter."

White-Cow-Killer calls it: "Made-a-house-of-old-wood winter."

1820–'21.—No. I. Large dirt lodge made by Two-Arrow. The projection at the top extends downward from the left, giving the impression of red and black cloth streamers.

No. II. The trader, La Conte, gave Two-Arrow a war-dress for his bravery. So translated an interpreter, and the sign shows the two arrows as the warrior's totem; likewise the gable of a house, which brings in the trader; also a long strip of black tipped with red streaming from the roof, which possibly may be the piece of parti-colored material out of which the dress was fashioned. This strip is not intended for sparks and smoke, as at first sight suggested, as the red would in that case be nearest the roof, instead of farthest from it.

	1818–'19.	1819–'20.	1820–'21.
I			
II			
III			



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No. III. A Minneconjou Dakota, named Two-Arrows, built himself a dirt medicine-lodge. This the interpreter calls, rather inaccurately, a headquarters for dispensing medicines, charms, and nostrums to the different bands of Dakotas. The black and red lines above the roof are not united and do not touch the roof.

White-Cow-Killer calls it: "Two-Arrows-made a-war-bonnet winter."

Battiste Good says: They made bands of strips of blankets in the winter.

Major Bush says: A Minneconjou, named Two-Arrow, made medicine in a dirt-lodge.

It will be observed that the interpreters vary in the details.

1821–'22.—No. I. Large ball of fire with hissing noise (aërolite).

No. II. The character represents the falling to earth of a very brilliant meteor, and though no such appearance is on record, there were in 1821 few educated observers near the Upper Mississippi and Missouri who would take the trouble to notify scientific societies of the phenomenon.

No. III. Dakota Indians saw an immense meteor passing from southeast to northwest which exploded with great noise (in Dakota Territory).

Red-Cloud said he was born in that year.

Battiste Good says: "Star-passed-by-with-loud-noise winter." His device is shown in Figure 42, showing the meteor, its pathway, and the clouds from which it came.

FIG. 42—Meteor.

White-Cow-Killer calls it "One-star-made-a-great-noise winter." See also Cloud-Shield's count, page 136.

1822–'23.—No. I. Trading store built at Little Missouri, near Fort Pierre.

No. II.—Another trading house was built, which was by a white man called Big-Leggings, and was at the mouth of the Little Missouri or Bad River. The drawing is distinguishable from that for 1819–'20.

No. III. Trading post built at the mouth of Little Missouri River.

1823–'24.—No. I. Whites and Dakotas fight Rees.

No. II. White soldiers made their first appearance in the region. So said the interpreter, Clément, but from the unanimous interpretation of others the event portrayed is the attack of the United States forces, accompanied by Dakotas, upon the Arikara villages, the historic account of which is as follows, abstracted from the annual report of J. C. Calhoun, Secretary of War, November 29, 1823:

General William H. Ashley, lieutenant-governor of the State of Missouri, a licensed trader, was treacherously attacked by the Arickara Indians at their village on the west bank of the Missouri River, about midway between the present Fort Sully and Fort Rice, on June 2, 1823. Twenty-three of the trading party were killed and wounded, and the remainder retreated in boats a considerable distance down the river,

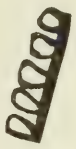
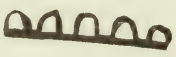
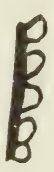
whence they sent appealing for succor to the commanding officer at Fort Atkinson, the present site of Council Bluffs. This officer was Col. H. Leavenworth, Sixth United States Infantry, who marched June 22, with 220 men of that regiment, 80 men of trading companies, and two 6-pound cannon, a 5½-inch brass howitzer, and some small swivels, nearly 700 miles through a country filled with hostile or unreliable Indians to the Ree villages, which, after much hardship and some losses, he reached on the 9th of August. The Dakotas were at war with the Arickara or Rees, and 700 to 800 of their warriors had joined the United States forces on the way; of these Dakotas 500 are mentioned as Yanktons, but the tribes of the remainder are not designated in the official reports. The Rees were in two villages, the lower one containing seventy-one dirt lodges and the upper seventy, both being inclosed with palisades and a ditch, and the greater part of the lodges having a ditch around the bottom on the inside. The enemy, having knowledge of the expedition, had fortified and made every preparation for resistance. Their force consisted of over 700 warriors, most of whom were armed with rifles procured from British traders. On the 9th of August the Dakotas commenced the attack, and were driven back until the regular troops advanced, but nothing decisive resulted until the artillery was employed on the 10th, when a large number of the Rees, including their chief, Grey-Eyes, were killed, and early in the afternoon they begged for peace. They were much terrified and humbled by the effect of the cannon, which, though small, answered the purpose. During the main engagement the Dakotas occupied themselves in gathering and carrying off all the corn to be found, and before the treaty was concluded, which, at the supplication of the Rees, Colonel Leavenworth agreed to, the Dakotas all left in great disgust at not being allowed to kill and scalp the surrendered warriors with their squaws and pappooses, take possession of the villages, horses, etc., and in fact to exterminate their hereditary foes. However, the Rees, having become panic-stricken after the treaty and two days of peaceful intercourse with the soldiers, deserted their homes, and the troops, embarking on the 15th to descend the river, shortly saw the villages in flames, which was the work either of the Dakotas or of inimical traders.

The device is believed to represent an Arickara palisaded village and attacking soldiers. Not only the remarkable character and triumphant result of this expedition, but the connection that the Dakotas themselves had with it, made it a natural subject for the year's totem.

All the winter counts refer to this expedition.

No. III. United States troops fought Ree Indians.

Battiste Good says: "General-———-first-appeared-and-the-Dakotas-aided-him-in-an-attack-on-the-Rees winter," also "Much-corn winter." For his character see Figure 69, page 166. The gun and the arrow in contact with the ear of corn show that both whites and Indians fought the Rees.

	1824–'25.	1825–'26.	1826–'27.
I			
II			
III			

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White-Cow-Killer calls it "Old-corn-plenty winter."

Mato Sapa's chart gives the human figure with a military cap, beard, and goatee.

1824–'25.—No. I. All the horses of Little-Swan's father are killed by Indians through spite.

No. II. Swan, chief of the Two Kettle tribe, had all of his horses killed. Device, a horse pierced by a lance, blood flowing from the wound.

No. III. Swan, a Minneconjou Indian, had twenty horses killed by a jealous Indian.

Mato Sapa says: Swan, a Minneconjou chief, lost twenty horses killed by a jealous Indian.

Major Bush says the same.

1825–'26.—No. I. River overflows the Indian camp; several drowned. The-Flame, the recorder of this count, born. In the original drawing the five objects above the line are obviously human heads.

No. II. There was a remarkable flood in the Missouri River, and a number of Indians were drowned. With some exercise of fancy, the symbol may suggest heads appearing above a line of water, or it may simply be the severed heads, several times used, to denote Indians other than Dakotas, with the uniting black line of death.

No. III. Thirty lodges of Dakota Indians drowned by a sudden rise of the Missouri River about Swan Lake Creek, which is in Horsehead Bottom, 15 miles below Fort Rice. The five heads are more clearly drawn than in No. II.

Battiste Good says: "Many-Yanktonais-drowned winter;" adding: The river bottom on a bend of the Missouri River where they were encamped was suddenly submerged, when the ice broke and many women and children were drowned. This device is presented in Figure 43.

FIG. 43.—River freshet..

All the winter counts refer to this flood.

1826–'27.—No. I. All of the Indians who ate of a buffalo killed on a hunt died of it, a peculiar substance issuing from the mouth.

No. II. "An Indian died of the dropsy." So Basil Clément was understood, but it is not clear why this circumstance should have been noted, unless the appearance of the disease was so unusual in 1826 as to excite remark. Baron de La Hontan, a good authority concerning the Northwestern Indians before they had been greatly affected by intercourse with whites, although showing a tendency to imitate another baron—Munchausen—as to his personal adventures, in his Nouveaux Voyages dans l'Amérique Septentrionale specially mentions dropsy as one of the diseases unknown to them. Carver also states that this malady was extremely rare. Whether or not the dropsy was very uncommon, the swelling in this special case might have been so enormous

as to render the patient an object of general curiosity and gossip, whose affliction thereby came within the plan of the count. The device merely shows a man-figure, not much fatter than several others, but distinguished by a line extending sidewise from the top of the head and inclining downward. The other records cast doubt upon the interpretation of dropsy.

No. III. Dakota war party killed a buffalo; having eaten of it they all died.

Battiste Good says: "Ate-a-whistle-and-died winter," and adds: "Six Dakotas, on the war-path, had nearly perished with hunger, when they found and ate the rotting carcass of an old buffalo, on which the wolves had been feeding. They were seized soon after with pains in the stomach, their abdomens swelled and gas poured from the mouth, and they died of a whistle, or from eating a whistle." The sound of gas escaping from the mouth is illustrated in his figure which see in Figure 146, page 221.

White-Cow-Killer calls it "Long-whistle-sick winter."

1827–'28.—No. I. A Minneconjou is stabbed by a Gros Ventre, and his arm shrivels up.

No. II. Dead-Arm was stabbed with a knife or dirk by a Mandan. The illustration is quite graphic, showing the long-handled dirk in the bloody wound and the withered arm. Though the Mandans are also of the great Siouan family, the Dakotas have pursued them with special hatred. In 1823, their number, much diminished by wars, still exceeded 2,500.

No. III. A Minneconjou Dakota wounded with a large knife by a Gros Ventre. The large knife was a sword, and the Indian who was wounded was named, afterwards, Lame-Shoulder. This is an instance of a change of name after a remarkable event in life.

1828–'29.—No. I. Chardran, a white man, builds a house at forks of Cheyenne River. This name should probably be spelled Chadron, with whom Catlin hunted in 1832, in the region mentioned.

No. II. A white man named Shardran, who lately (as reported in 1877) was still living in the same neighborhood, built a dirt lodge. The hatted head appears under the roof.

III. Trading post opened in a dirt lodge on the Missouri a little below the mouth of the Little Missouri River.

1829–'30.—No. I. A Dakota found dead in a canoe.

No. II. Bad-Spike killed another Indian with an arrow.

No. III. A Yanktonai Dakota killed by Bad-Arrow Indians.

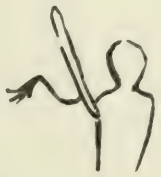
The Bad-Arrow Indians is a translation of the Dakota name for a certain band of Blackfeet Indians.

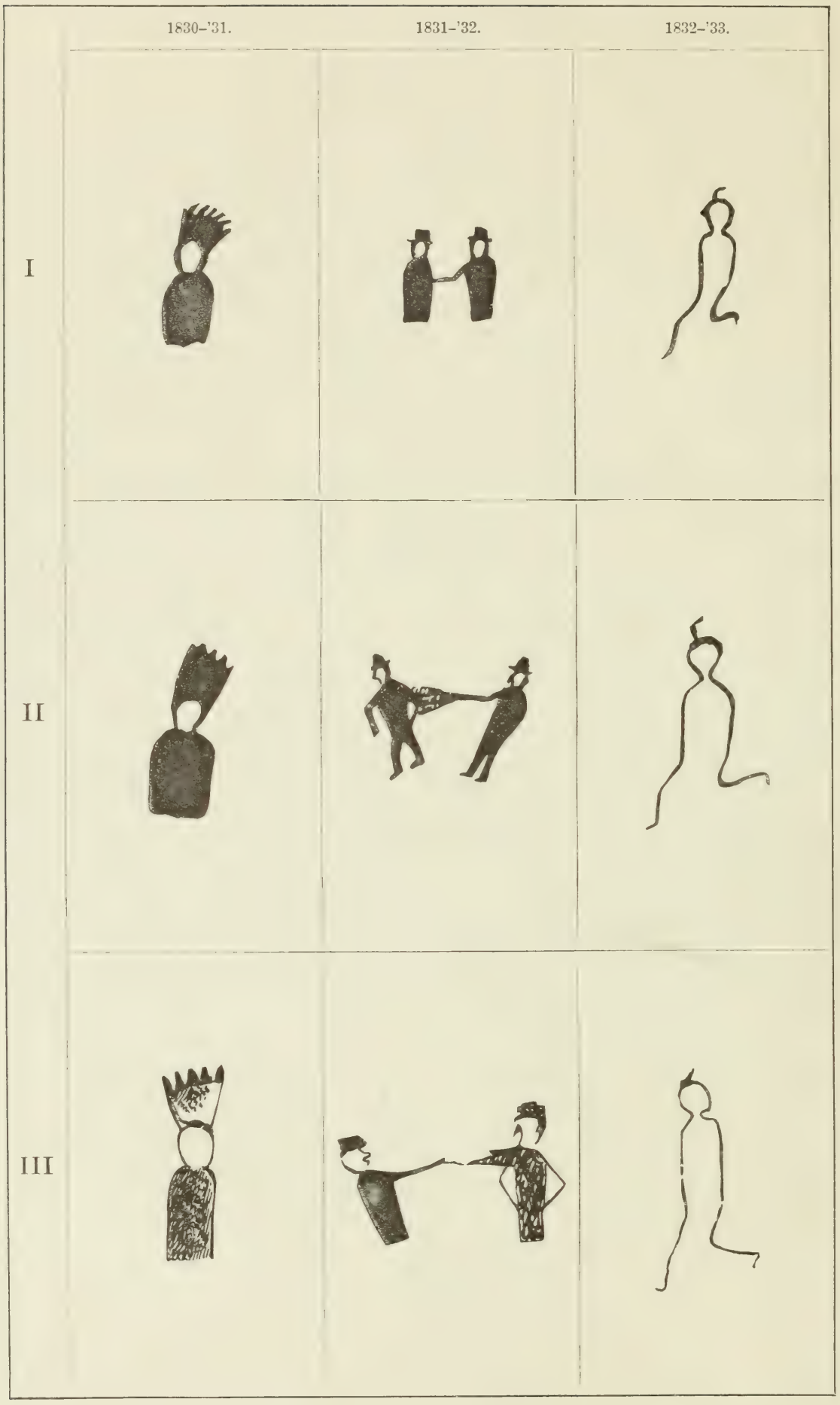
Mato Sapa says: a Yanktonai was killed by the Bad-Arrow Indians.

Major Bush says the same as Mato Sapa.

1830–'31.—No. I. Mandans kill twenty Crows at Bear Butte.

No. II. Bloody battle with the Crows, of whom it is said twenty-three

	1827–'28.	1828–'29.	1829–'30.
I			
II			
III			

THE DAKOTA WINTER COUNTS.



THE DAKOTA WINTER COUNTS.

were killed. Nothing in the sign denotes number, it being only a man-figure with red or bloody body and red war bonnet.

No. III. Twenty Crow and one Cheyenne Indians killed by Dakotas at Bear Butte.

Mato Sapa says: One Cheyenne and twenty Crows were killed by Dakotas at Bear Butte.

Major Bush says the same as Mato Sapa.

1831–'32.—No. I. Two white men killed by a white man at Medicine Creek, below Fort Sully.

No. II. Le Beau, a white man, killed another named Kermel. Another copy reads Kennel. Le Beau was still alive at Little Bend, 30 miles above Fort Sully, in 1877.

No. III. Trader named Le Beau killed one of his employés on Big Cheyenne River, below Cherry Creek.

1832–'33.—No. I. Lone-Horn's father broke his leg.

No. II. Lone-Horn had his leg "killed," as the interpretation gave it. The single horn is on the figure, and a leg is drawn up as if fractured or distorted, though not unlike the leg in the character for 1808–'09, where running is depicted.

No. III. A Minneconjou Dakota, Lone-Horn's father, had his leg broken while running buffalo.

Mato Sapa and Major Bush also say Lone-Horn's father.

Battiste Good says: "Stiff-leg-With-war-bonnet-on-died winter." He was killed in an engagement with the Pawnees on the Platte River.

White-Cow-Killer calls it "One-Horn's-leg-broken winter."

In Catlin's "North American Indians," New York, 1844, Vol. I, page 211, the author, writing from the mouth of Teton River, Upper Missouri, site of Fort Pierre, described Ha-won-je-tah, The One-Horn, head chief of all the bands of the Dakotas, which were about twenty. He was a bold, middle-aged man of medium stature, noble countenance, and figure almost equalling an Apollo. His portrait was painted by Catlin in 1832. He took the name of One-Horn, or One-Shell, from a simple small shell that was hanging on his neck, which descended to him from his father, and which he valued more than anything else which he possessed, and he kept that name in preference to many others more honorable which he had a right to have taken, from his many exploits.

On page 221, the same author states, that after being the accidental cause of the death of his only son, Lone-Horn became at times partially insane. One day he mounted his war-horse, vowing to kill the first living thing he should meet, and rode to the prairies. The horse came back in two hours afterwards, with two arrows in him covered with blood. His tracks were followed back, and the chief was found mangled and gored by a buffalo bull, the carcass of which was stretched beside him. He had driven away the horse with his arrows and killed the bull with his knife.

Another account in the catalogue of Catlin's cartoons gives the portrait of The One-Horn as number 354, with the statement that having killed his only son accidentally, he became deranged, wandered into the prairies, and got himself killed by an infuriated buffalo bull's horns. This was at the mouth of Little Missouri River, in 1834.

1833–'34.—No. I. Many stars fell (meteors). The character shows six black stars above the concavity of the moon.

No. II. "The stars fell," as the Indians all agreed. This was the great meteoric shower observed all over the United States on the night of November 12th of that year. In this chart the moon is black and the stars are red.

No. III. Dakotas witnessed magnificent meteoric showers; much terrified.

Battiste Good calls it "Storm-of-stars winter," and gives as the device a tipi, with stars falling around it. This is presented in Figure 44. The tipi is colored yellow in the original, and so represented in the figure according to the heraldic scheme.

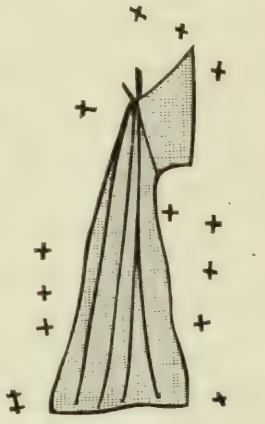


Fig. 44.—Meteoric shower.

White-Cow-Killer calls it "Plenty-stars winter."

All the winter counts refer to this meteoric display. See page 138.

1834–'35.—No. I. A Ree killed by a Dakota.

No. II. The chief, Medicine-Hide, was killed. The device shows the body as bloody, but not the war bonnet, by which it is distinguished from the character for 1830–'31.

No. III. An Uncpapa Dakota Medicine-man killed by the Ree Indians.

Mato Sapa says: An Uncpapa medicine-man was killed by Rees. There is no red on the figure.

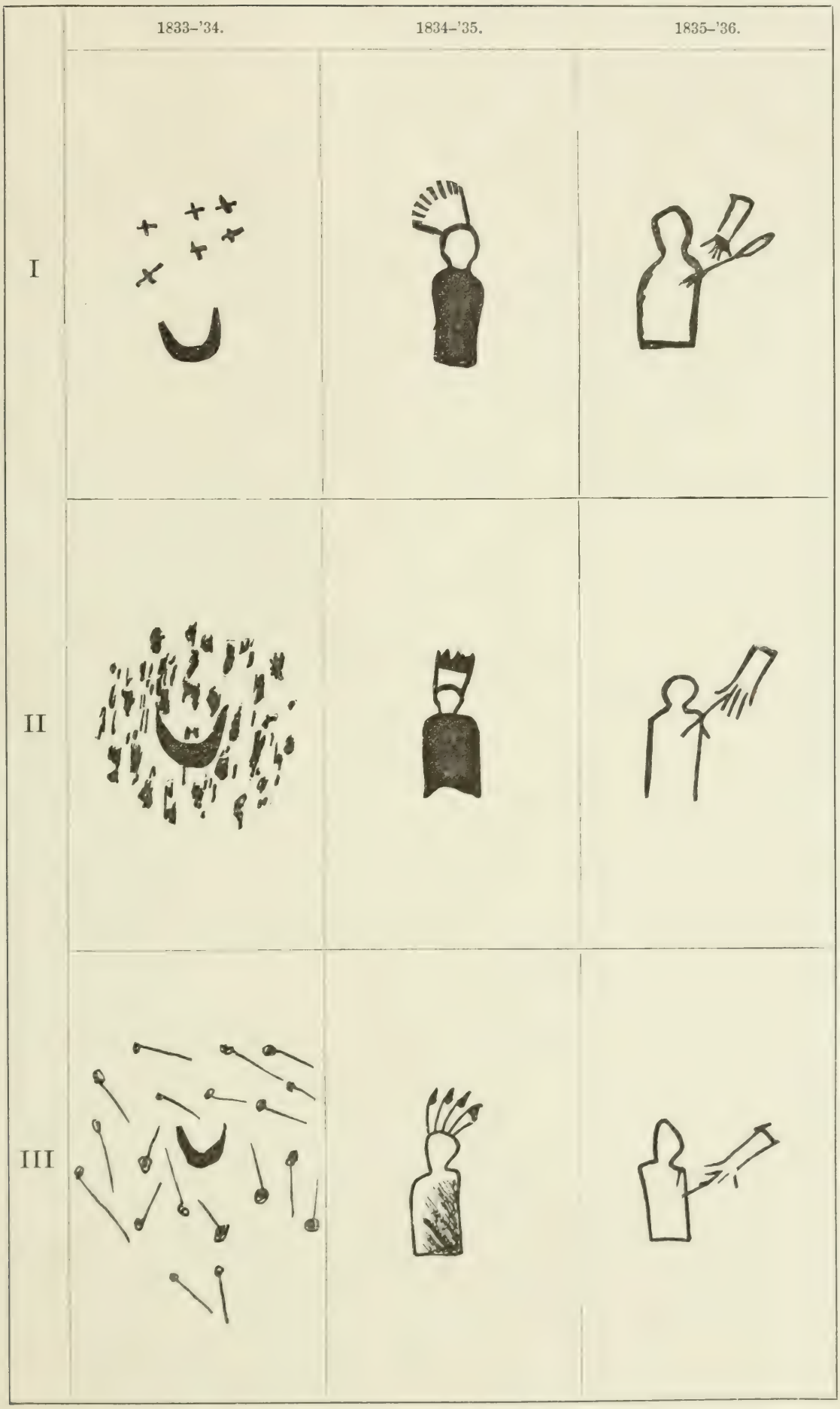
1835–'36.—No. I. Lame-Deer killed by a Dakota. The Dakota had only one arrow. He pulled it out and shot Lame-Deer many times.

No. II. Lame-Deer shot a Crow Indian with an arrow; drew it out and shot him again with the same arrow. The hand is drawing the arrow from the first wound. This is another instance of the principle on which events were selected. Many fights occurred of greater moment, but with no incident precisely like this.

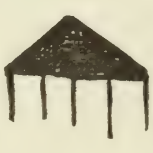
No. III. Minneconjou chief named Lame-Deer shot an Assiniboine three times with the same arrow. He kept so close to his enemy that he never let the arrow slip away from the bow, but pulled it out and shot it in again.

Mato Sapa says a Minneconjou named Lame-Deer shot an Assiniboine three times running with the same arrow.

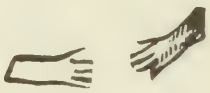
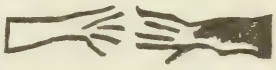
Lame-Deer was a distinguished chief among the hostiles in 1876. His camp of five hundred and ten lodges was surprised and destroyed



THE DAKOTA WINTER COUNTS.

	1836–'37.	1837–'38.	1838–'39.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

	1839–'40.	1840–'41.	1841–'42.
I			
II			
III			

by General Miles, and four hundred and fifty horses, mules, and ponies were captured.

1836–'37.—No. I. Father-of-the-Mandans died.

No. II. Band's-Father, chief of the Two Kettles, died. The device is nearly the same as that for 1816–'17, denoting plenty of buffalo belly; and the question might be raised, what the buffalo belly had to do with the demise of the lamented chieftain, unless he suffered from a fatal indigestion after eating too much of that delicacy.

Interpreter Fielder, however, throws light on the subject by saying that this character was used to designate the year when The-Breast, father of The-Band, a Minneconjou, died. The-Band himself died in 1875, on Powder River. His name was O-ye-a-pee. The character was therefore the buffalo breast, a name-totem.

No. III. Two Kettle, Dakota, named The-Breast, died.

Mato Sapa says: A Two Kettle, named The-Breast, died.

Major Bush same as Mato Sapa.

1837–'38.—No. I. Many elk and deer killed. The figure does not show the split hoof

No. II. Commemorates a remarkably successful hunt, in which it is said one hundred elk were killed. The drawing of the elk is good enough to distinguish it from the other quadrupeds in this chart.

No. III. The Dakotas killed one hundred elk at the Black Hills.

Mato Sapa says: The Dakotas killed one hundred elk at the Black Hills. His figure does not show the split hoof.

1838–'39.—No. I. Indians built a lodge on White Wood Creek, in the Black Hills, and wintered there.

No. II. A dirt lodge was built for Iron-Horn. The other dirt lodge (1815–'16) has a mark of ownership, which this has not. Perhaps it was not so easy to draw an iron horn as a crow feather, and the distinction was accomplished by omission. A chief of the Minneconjous is mentioned in General Harney's report in 1856, under the name of The-One-Iron-Horn.

No. III. A Minneconjou chief, named Iron-Horn, built dirt lodge (medicine lodge) on Moreau River (same as Qwl River).

This Minneconjou chief, Iron-Horn, died a few years ago and was buried near Fort Sully. He was father-in-law of Dupuis, a French Canadian.

1839–'40.—No. I. Dakotas killed twenty lodges of Arapahos.

No. II. The Dakotas killed an entire village of Snake Indians. The character is the ordinary tipi pierced by arrows. The Snakes, or Shoshoni, were a numerous and wide-spread people, inhabiting Southeastern Oregon, Idaho, Western Montana, and portions of Utah and Nevada, extending into Arizona and California.

No. III. A Minneconjou Dakota, named The-Hard (with band), killed seven lodges of the Blue Cloud Indians.

The Blue Clouds are the Arapahos, so styled by the Dakotas, original *Maqpíyato.*

Mato Sapa says: A Minneconjou Dakota named The-Hard killed seven lodges of the Blue Cloud Indians.

Major Bush same as Mato Sapa.

1840–'41.—No. I. Red-Arm, a Cheyenne, and Lone-Horn, a Dakota, make peace.

No. II. The Dakotas made peace with the Cheyennes, a well-known tribe belonging to the Algonkin family. The symbol of peace is the common one of the approaching palms of two persons. The different coloration of the two arms distinguishes them from the approximation of the palms of one person.

No. III. Dakotas made peace with Cheyenne Indians.

1841–'42.—No. I. Feather in-the-Ear steals horses from the Crows.

No. II. Feather-in-the-Ear stole thirty spotted ponies. The spots are shown red, distinguishing them from those of the curly horse in the character for 1803–'04.

No. III. A Minneconjou Dakota, named Feather-in-his-Ear, stole nineteen spotted horses from the Crow Indians.

Mato Sapa says: A Minneconjou named Feather-in-the-Ear stole nineteen spotted horses from the Crows.

Major Bush says the same, except that he gives the number as nine instead of nineteen.

A successful theft of horses, demanding skill, patience, and daring, is generally considered by the plains Indians to be of equal merit with the taking of scalps. Indeed, the successful horse-thief is more popular than a mere warrior on account of the riches gained by the tribe, wealth until lately being generally estimated in ponies as the unit of value.

1842–'43.—No. I. A Minneconjou chief tries to make war. The tip of the feather is black. No red in it.

No. II. One-Feather raised a large war party against the Crows. This chief is designated by his long solitary red eagle feather, and holds a pipe with black stem and red bowl, alluding to the usual ceremonies before starting on the war path. For further information on this subject see page 139. The Red-War-Eagle-Feather was at this time a chief of the Sans Arcs.

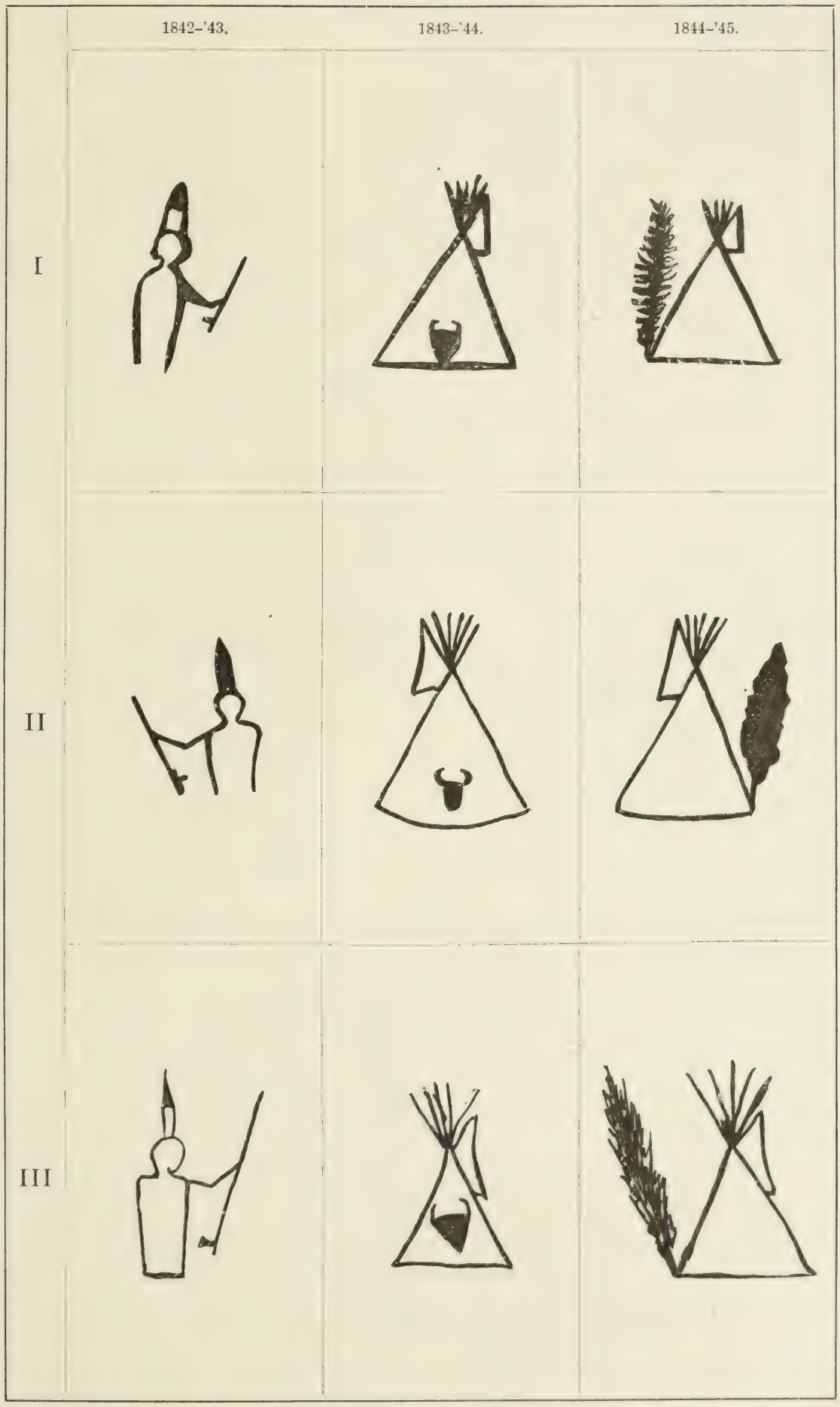
No. III. Feather-in-the-Ear made a feast, to which he invited all the young Dakota braves, wanting them to go with him. A memorandum is added that he failed to persuade them. See Corbusier Winter Counts for same year, page 141.

Mato Sapa says: The same man (referring to last year), Feather-in-the-Ear, made a feast inviting all Dakota young men to go to war.

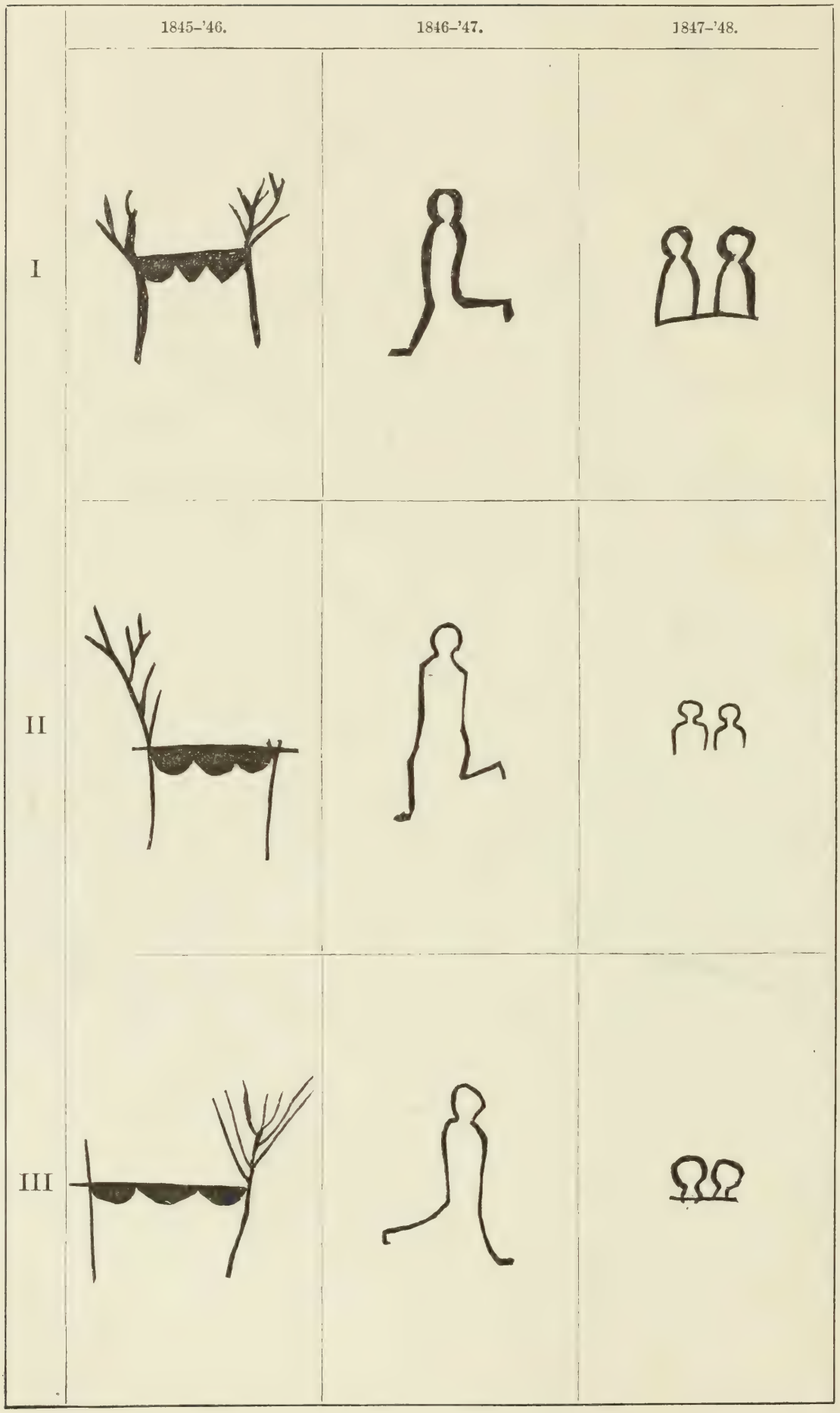
Major Bush says same as Mato Sapa.

1843–'44.—No. I. Buffalo is scarce; an Indian makes medicine and brings them to the suffering.

No. II. The Sans Arcs made medicine to bring the buffalo. The medicine tent is denoted by a buffalo's head drawn on it.



THE DAKOTA WINTER COUNTS.



THE DAKOTA WINTER COUNTS.

No. III. No buffalo; Indians made medicine to the Great Spirit by painting a buffalo's head on lodge; plenty came.

Mato Sapa says: Dakotas were starving; made medicine to Great Spirit by painting buffalo head on their lodges; plenty came.

Major Bush substantially same as Mato Sapa.

1844–'45.—No. I. Mandans wintered in Black Hills.

No. II. The Minneconjous built a pine fort. Device: A pine tree connected with a tipi.

No. III. Unusually heavy snow; had to build corrals for ponies.

Major Bush says: Heavy snow, in which many of their ponies perished.

Probably the Indians went into the woods and erected their tipis there as protection from the snow, thus accounting for the figure of the tree.

1845–'46—No. I. Dakotas have much feasting at Ash Point, 20 miles above Fort Sully.

No. II. Plenty of buffalo meat, which is represented as hung upon poles and trees to dry.

No. III. Immense quantities of buffalo meat.

1846–'47.—No. I. Broken-Leg dies.

No. II. Broken-Leg died. Rev. Dr. Williamson says he knew him. He was a Brulé. There is enough difference between this device and those for 1808–'09 and 1832–'33 to distinguish each.

No. III. A Minneconjou Dakota named Broken-Leg died.

Battiste Good calls this: "The-Teal-broke-his-leg winter." The arm in his character, given in Figure 45, is lengthened so as nearly to touch the broken leg, which is shown distorted, instead of indicating the injury by the mere distortion of the leg itself as in the charts on Plate XXIV. The bird over the head and connected by a line with it, probably represents the teal as a name-totem. He was perhaps called Broken-Leg after the injury, or perhaps the other interpreters did not remember his name, only the circumstance.

FIG. 45.—The-Teal-broke-his-leg.

Mato Sapa says: A Minneconjou named Broken-Leg died.

The Corbusier records for 1847–'48 refer to a number of accidents by which legs were broken. See page 142.

1847–'48—No. I. Mandans kill two Minneconjous.

No. II. Two-Man was killed. His totem is drawn—two small man-figures side by side.

No. III. Two Minneconjou Dakotas killed by the Assiniboine Indians.

Major Bush says: the wife of an Assiniboine chief named Big-Thunder had twins.

1848–'49.—No. I. Humpback, a Minneconjou, killed.

No. II. Humpback was killed. An ornamented lance pierces the distorted back.

No. III. A Minneconjou Dakota named Broken-Back was killed by the Crow Indians at Black Hills.

Major Bush says: A Minneconjou, Broken-Back, was killed by Crows.

1849–'50.—No. I. Crows steal all the Dakotas' horses.

No. II. The Crows stole a large drove of horses (it is said eight hundred) from the Brulés. The circle may denote multitude, at least one hundred, but probably is a simple design for a camp or corral from which a number of horse-tracks are departing.

No. III. Crow Indians stole two hundred horses from the Minneconjou Dakotas near Black Hills.

Interpreter A. Lavary says: Brulés were at the headwaters of White River, about 75 miles from Fort Laramie, Wyoming. The Dakotas surprised the Crows in 1849, killed ten, and took one prisoner, because he was a man dressed in woman's clothes, and next winter the Crows stole six hundred horses from the Brulés. See page 142.

1850–'51.—No. I. Cow with old woman in her belly. Cloven hoof not shown.

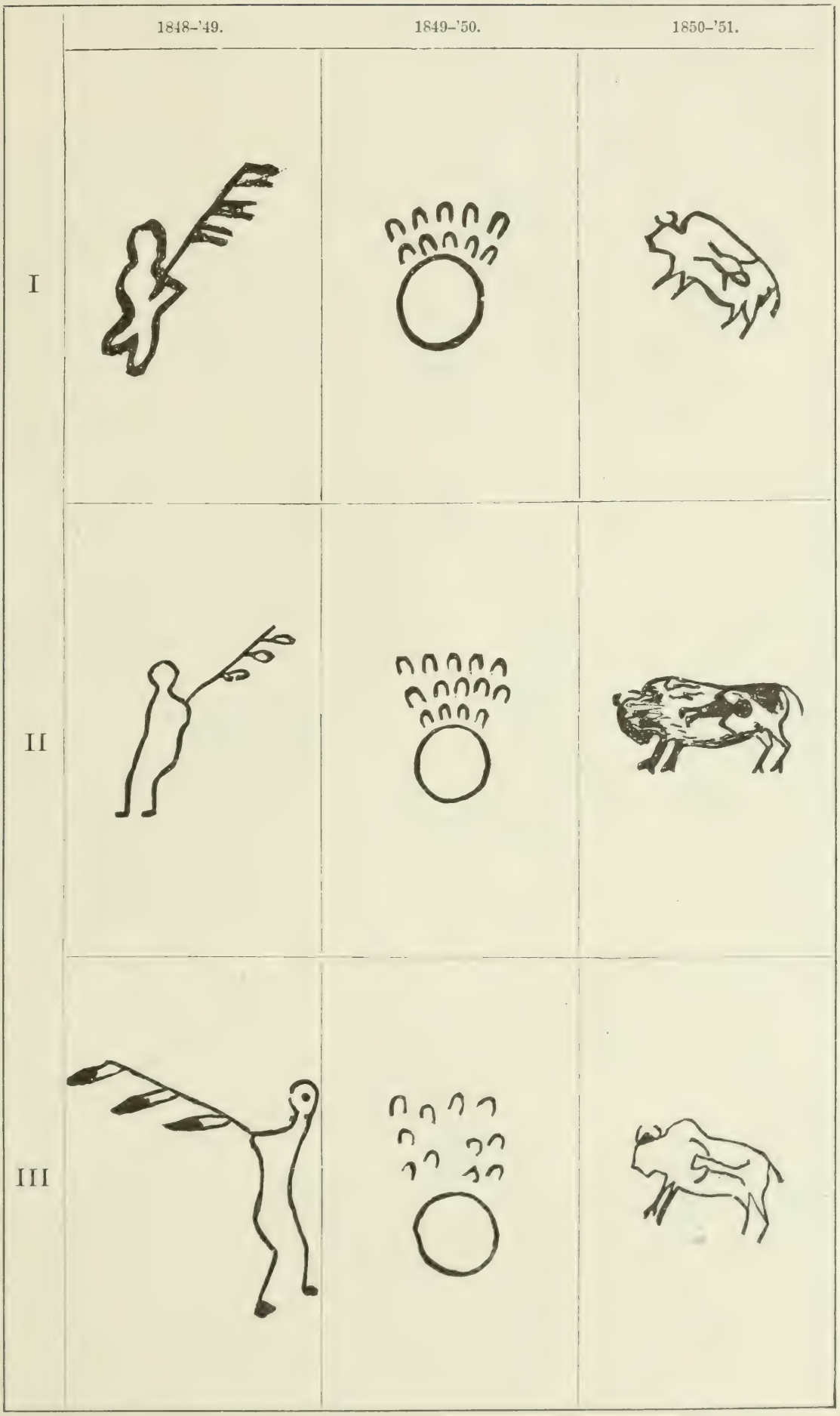
No. II. The character is a distinct drawing of a buffalo containing a human figure. Clément translated that "a buffalo cow was killed in that year, and an old woman found in her belly"; also that all the Indians believed this. Good-Wood, examined through another interpreter, could or would give no explanation, except that it was "about their religion." At first the writer suspected that the medicine men had manufactured some pretended portent out of a fœtus taken from a real cow, but the Dakotas have long believed in the appearance from time to time of a monstrous animal that swallows human beings. This superstition was perhaps suggested by the bones of mastodons, often found in the territory of those Indians; and the buffalo being the largest living animal known to them, its name was given to the legendary monster, in which nomenclature they were not wholly wrong, as the horns of the fossil *Bison latifrons* are 10 feet in length. The medicine men, perhaps, announced, in 1850, that a squaw who had disappeared was swallowed by the mammoth, which was then on its periodical visit, and must be propitiated.

No. III. A Minneconjou Dakota, having killed a buffalo cow, found an old woman inside of her.

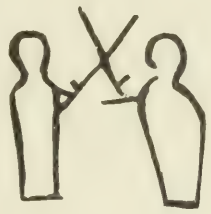
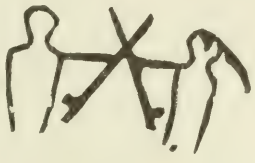
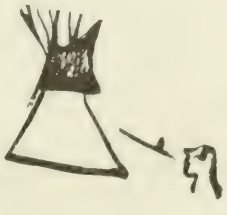
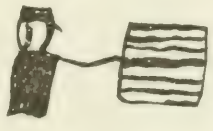
Memorandum from interpreter: A small party of Dakotas, two or three young men, returning unsuccessful from a buffalo hunt, told this story, and it is implicitly believed by the Dakotas.

Major Bush suggests that perhaps some old squaw left to die sought the carcass of a buffalo for shelter and then died. He has known that to occur.

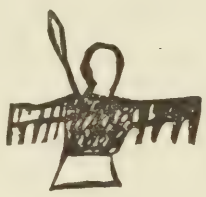
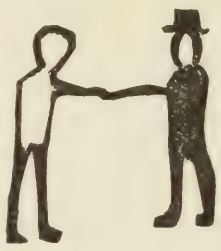
1851–'52.—No. I. Peace made with the Crows.



THE DAKOTA WINTER COUNTS.

	1851–'52.	1852–'53.	1853–'54.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

	1854–'55.	1855–'56.	1856–'57.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

No. II. Peace with the Crows. Two Indians, with differing arrangement of hair, showing two tribes, are exchanging pipes for a peace-smoke.

No. III. Dakotas made peace with the Crow Indians. It was, as usual, broken immediately.

The treaty of Fort Laramie was in 1851.

1852–'53.—No. I. A Crow chief, Flat-Head, comes into the tipi of a Dakota chief, where a council was assembled, and forces them to smoke the pipe of peace. This was a daring act, for he was in danger of immediate death if he failed.

No. II. The Nez Percés came to Lone-Horn's lodge at midnight. The device shows an Indian touching with a pipe a tipi, the top of which is black or opaque, signifying night. The Nez Percés are so styled by a blunder of the early travelers, as they never have been known to pierce their noses, although others of their family, the Sahaptin, do so. The tribe was large, dwelling chiefly in Idaho.

No. III. An enemy came into Lone-Horn's lodge during a medicine feast and was not killed. (The enemy numbered about fourteen and had lost their way in a snow-storm.) The pipe is not in the man's hand, and the head only is drawn with the pipe between it and the tipi.

Mato Sapa says: Several strange Indians came into the Dakota camp, were saved from being killed by running into Lone-Horn's lodge.

Major Bush says: An enemy came into Lone-Horn's lodge during a feast and was not killed.

Touch-the Clouds, a Minneconjou, son of Lone-Horn, on being shown Chart No. II by the present writer, designated this character as being particularly known to him from the fact of its being his father's lodge. He remembers all about it from talk in his family, and said it was the Nez Percés who came.

1853–'54.—No. I. Spanish blankets introduced by traders. The blanket is represented without the human figure.

No. II. Spanish blankets were first brought to the country. A fair drawing of one of those striped blankets, held out by a white trader.

No. III. Dakotas first saw the Spanish blankets.

See Corbusier records for 1851–'52, page 142.

1854–'55.—No. I. Brave-Bear killed by Blackfeet.

No. II. Brave-Bear was killed. It does not appear certain whether he had already invested in the new style of blanket or whether the extended arms are ornamented with pendent stripes. The latter is more probable.

No. III. A Minneconjou Dakota named Brave-Bear was killed by the Upper Blackfeet. [Satsika?]

See Corbusier winter-counts for the same year, page 143.

1855–'56.—No. I. General Harney (Putin ska) makes a treaty.

No. II. General Harney made peace with a number of the tribes or

bands of the Dakotas. This was at Fort Pierre, Dakota. The figure shows an officer in uniform shaking hands with an Indian.

Executive document No. 94, Thirty-fourth Congress, first session, Senate, contains the "minutes of a council held at Fort Pierre, Nebraska, on the 1st day of March, 1856, by Brevet Brig.-Gen. William S. Harney, U. S. Army, commanding the Sioux expedition, with the delegations from nine of the bands of the Sioux, viz., the Two-Kettle band, Lower Yankton, Oncpapas, Blackfeet Sioux, Minneconjous, Sans Arcs, Yanctonnais (two bands), Brulés of the Platte."

No. III. Dakotas made peace with General Harney (called by them Putinska, white beard or moustache) at Fort Pierre, Dakota.

1856–'57.—No. I. Four-Horns, a great warrior.

No. II. Four-Horn was made a calumet or medicine-man. This was probably the result of an important political struggle, as there is much rivalry and electioneering for the office, which, with its triple character of doctor, priest, and magician, is one of far greater power than the chieftainship. A man with four horns holds out the same kind of ornamented pipe-stem shown in the character for 1804–'05, it being his badge of office. Four-Horn was one of the subchiefs of the Uncpapas, and was introduced to General Harney at the council of 1856 by Bear-Rib, head chief of that tribe.

No. III. A Minneconjou Dakota, named Red-Fish's-Son, danced calumet dance.

Mato Sapa says the same as last.

Major Bush says, "A Minneconjou, Red-Fish's-Son, The-Ass, danced the Four-Horn calumet."

Interpreter Clément, in the spring of 1874, said that Four-Horn and Sitting-Bull were the same person, the name Sitting-Bull being given him after he was made a calumet man. No other authority tells this.

1857–'58.—No. I. White-Robe kills a Crow woman. There is but one arrow and one blood spot in the character.

No. II. The Dakotas killed a Crow squaw. The stripes on the blanket are shown horizontally, Brave-Bear's, 1854–'55, and Swan's, 1866–'67, being vertical. She is pierced by four arrows, and the peace made with the Crows in 1851–'52 seems to have been short lived.

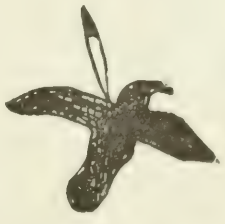
No. III. A party of Crow Indians, while on a visit to the Dakotas, had one of their number killed by a young Dakota. The figure has blood from the four arrows running down each side of the body.

Mato-Sapa says : A Crow was killed by a Dakota while on a visit to the latter.

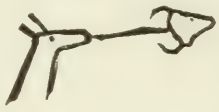
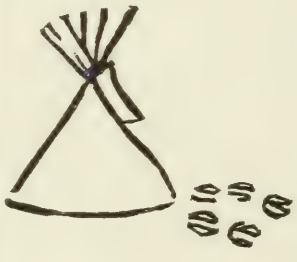
Major Bush says substantially the same as Mato Sapa.

1858–'59.—No. I. Lone-Horn makes medicine. "At such times Indians sacrifice ponies, etc., and fast." In this character the buffalo-head is black.

No. II. Lone-Horn, whose solitary horn appears, made buffalo medicine, probably on account of the scarcity of that animal. Again the

	1857–'58.	1858–'59.	1859–'60.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

	1860–'61.	1861–'62.	1862–'63.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

head of an albino bison. One-Horn, doubtless the same individual, is recorded as the head chief of the Minneconjous at this date.

No. III. A Minneconjou chief, named Lone-Horn, made medicine with white buffalo-cow skin.

Lone-Horn, chief of Minneconjous, died in 1874, in his camp on the Big Cheyenne.

1859–'60.—No. I. Big-Crow killed.

No. II. Big-Crow, a Dakota chief, was killed by the Crows. The crow, transfixed by an arrow, is drawn so as to give quite the appearance of an heraldic crest.

No. III. A Minneconjou Dakota, named Big-Crow, was killed by the Crow Indians. He had received his name from killing a Crow Indian of unusual size.

Mato Sapa says: Big-Crow, a Minneconjou, was killed by Crows.

Major Bush says same as Mato Sapa.

1860–'61.—No. I. The-Elk-who-shows himself-when-he-walks makes medicine.

No. II. Device, the head and neck of an elk, like that part of the animal in 1837–'38, with a line extending from its mouth, at the extremity of of which is the albino buffalo-head. "The elk made you understand his voice while he was walking." The interpreter persisted in this oracular rendering, probably not being able to fully catch the Indian explanation from want of thorough knowledge of the language. The ignorance of professed interpreters, who easily get beyond their philological depth, but are ashamed to acknowledge it, has occasioned many official blunders. This device and its interpretation were unintelligible to the writer until examination of General Harney's report above referred to showed the name of a prominent chief of the Minneconjous, set forth as "The-Elk-that-Hollows-Walking." It then became probable that the device simply meant that the aforesaid chief made buffalo medicine, which conjecture, published in 1877, the other records subsequently discovered verified.

No. III. A Minneconjou Dakota, named Red-Fish's-Son, made medicine with white buffalo-cow skin.

Mato Sapa's record agrees with No. III.

Major Bush says the same, adding, after the words "Red-Fish's-Son," "The-Ass."

Interpreter A. Lavary said, in 1867, that The-Elk-that-Hollows-Walking, then chief of the Minneconjous, was then at Spotted-Tail's camp. His father was Red-Fish. He was the elder brother of Lone-Horn. His name is given as A-hag-a-hoo-man-ie, translated The Elk's-Voice-Walking, compounded of He-ha-ka, elk, and Omani, walk—this according to Lavary's literation. The correct literation of the Dakota word meaning elk is *heqaka*; voice *ho*; and to walk, walking, *mani*. Their compound would be *Heqaka ho mani*, the translation being the same as above given.

1861–'62.—No. I. Buffalo very plenty.

No. II. Buffalo were so plenty that their tracks came close to the tipis. The cloven hoof-mark is cleverly distinguished from the tracks of horses in the character for 1849–'50.

No. III. Dakotas had unusual abundance of buffalo.

1862–'63.—No. I. Red-Plume kills an enemy.

No. II. Red-Feather, a Minneconjou, was killed. His feather is shown entirely red, while the "one-feather" in 1842–'43 has a black tip.

No. III. A Minneconjou Dakota killed an Assiniboine named Red-Feather.

Mato Sapa says: Minneconjous kill an Assiniboine named Red-Feather.

Major Bush agrees with Mato Sapa.

It is to be noted that there is no allusion to the great Minnesota massacre, which commenced in August, 1862, and in which many of the Dakotas belonging to the tribes familiar with these charts, were engaged. Little-Crow was the leader. He escaped to the British possessions, but was killed in July, 1863. Perhaps the reason of the omission of any character to designate the massacre, was the terrible retribution that followed it, beginning with the rout by Colonel Sibley, on September 23, 1862. The Indian captives amounted in all to about eighteen hundred. A military commission sentenced three hundred and three to be hanged and eighteen to imprisonment for life. Thirty-eight were actually hanged, December 26, 1862, at Camp Lincoln.

1863–'64.—No. I. Crows kill eight Dakotas on the Yellowstone.

No. II. Eight Dakotas were killed. Again the short parallel black lines united by a long stroke. In this year Sitting Bull fought General Sully in the Black Hills.

Interpreter Lavary says General Sully killed seven or eight Crows at The-Place-They-Shot-The-Deer, Ta-cha-con-té, about 90 miles southwest of Fort Rice, Dakota. Mulligan says that General Sully fought the Yanktonnais and the Santees at that place.

No. III. Eight Minneconjou Dakotas killed by Crow Indians.

See Corbusier Winter Counts for same year, page 144.

1864–'65.—No. I. Four Crows caught stealing horses from the Dakotas were tortured to death. Shoulders shown.

No. II. The Dakotas killed four Crows. Four of the same rounded objects, like several heads, shown in 1825–'26, but these are bloody, thus distinguishing them from the cases of drowning.

No. III. Four Crow Indians killed by the Minneconjou Dakotas. Necks shown.

1865–'66.—No. I. Many horses died.

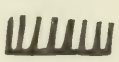
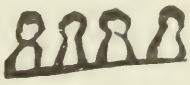
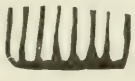
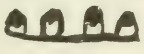
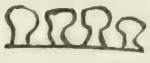
No. II. Many horses died for want of grass. The horse here drawn is sufficiently distinct from all others in the chart.

No. III. Dakotas lost many horses in the snow.

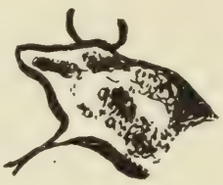
See Corbusier's Winter Counts, No. II for same year, page 144.

1866–'67.—No. I. Little-Swan, a great warrior.

No. II. Swan, father of Swan, chief of the Minneconjous in 1877, died.

	1863–'64.	1864–'65.	1865–'66.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

	1866–'67.	1867–'68.	1868–'69.
I			
II			
III			

THE DAKOTA WINTER COUNTS.

With the assistance of the name the object intended for his totem may be recognized as a swan swimming on the water.

No. III. Minneconjou Dakota chief, named Swan, died.

Mato Sapa's record has a better representation of a swan.

Interpreter Lavary says: Little-Swan died in this year on Cherry Creek, 75 miles northwest of Fort Sully.

Major Bush says this is historically correct.

1867–'68.—No. I. Much medicine made.

No. II. Many flags were given them by the Peace Commission. The flag refers to the visit of the Peace Commissioners, among whom were Generals Sherman, Terry, and other prominent military and civil officers. Their report appears in the Annual Report of the Commissioner of Indian Affairs for 1868. They met at Fort Leavenworth, August 13, 1867, and between August 30 and September 13 held councils with the various bands of the Dakota Indians at Forts Sully and Thompson, and also at the Yankton, Ponka, and Santee Reservations. These resulted in the great Dakota treaty of 1868.

No. III. Made peace with General Sherman and others at Fort Laramie.

Mato Sapa says: Made peace with General Sherman and others at Fort Laramie.

Major Bush agrees with Mato Sapa.

See Corbusier's Winter Counts, No. II, page 144.

1868–'69.—No. I. First issue of beef by Government to Indians.

No. II. Texas cattle were brought into the country. This was done by Mr. William A. Paxton, a well-known business man, resident in Dakota in 1877.

No. III. Dakotas had plenty of white men's cattle (the result of the peace).

Mato Sapa agrees with No. III.

1869–'70.—No. I. Eclipse of the moon.

No. II. An eclipse of the sun. This was the solar eclipse of August 7, 1869, which was central and total on a line drawn through the Dakota country. This device has been criticised because the Indians believe an eclipse to be occasioned by a dragon or aerial monster swallowing the sun, and it is contended that they would so represent it. An answer is that the design is objectively good, the sun being painted black, as concealed, while the stars come out red, *i. e.*, bright, and graphic illustration prevails throughout the charts where it is possible to employ it. In addition, it is learned that Prof. Cleveland Abbé, who was famed as an astronomer before he became so as a meteorologist, was at Sioux Falls, with a corps of assistants, to observe this very eclipse, and explained the subject to a large number of Indians there at that time, so that their attention was not only directed specially to that eclipse, but also to the white men as interested in it, and to its real appearance as apart from their old superstition.

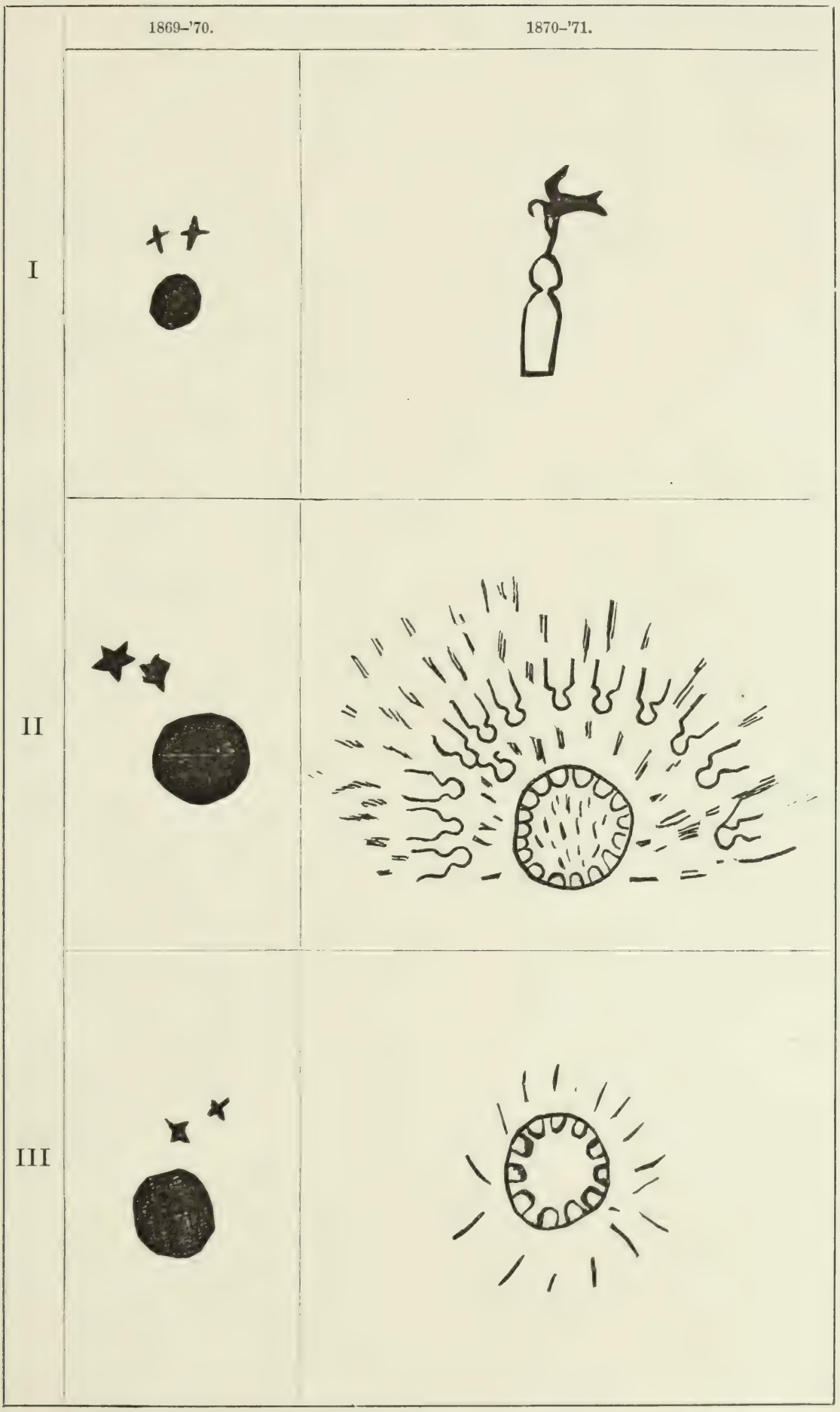
In addition to this fact, Dr. Washington Matthews, assistant surgeon United States Army, communicates the statement that the Indians had numberless other opportunities all over their country of receiving the same information. He was at Fort Rice during the eclipse and remembers that long before the eclipse occurred the officers, men, and citizens around the post told the Indians of the coming event and discussed it with them so much that they were on the tip-toe of expectancy when the day came. Two-Bears and his band were then encamped at Fort Rice, and he and several of his leading men watched the eclipse along with the whites and through their smoked glass, and then and there the phenomenon was thoroughly explained to them over and over again. There is no doubt that similar explanations were made at all the numerous posts and agencies along the river that day. The path of the eclipse coincided nearly with the course of the Missouri for over a thousand miles. The duration of totality at Fort Rice was nearly two minutes (1^m 48^s.)

No. III. Dakotas witnessed eclipse of the sun; frightened terribly.

It is remarkable that the Corbusier Winter Counts do not mention this eclipse.

1870–'71.—No. I. The-Flame's son killed by Rees. The recorder, The-Flame, evidently considered his family misfortune to be of more importance than the battle referred to by the other recorders.

No. II. The Uncpapas had a battle with the Crows, the former losing, it is said, 14 and killing 29 out of 30 of the latter, though nothing appears to show those numbers. The central object in the symbol is not a circle denoting multitude, but an irregularly rounded object, clearly intended for one of the wooden inclosures or forts frequently erected by the Indians, and especially the Crows. The Crow fort is shown as nearly surrounded, and bullets, not arrows or lances, are flying. This is the first instance in which any combat or killing is portrayed where guns explicitly appear to be used by Indians, though nothing in the chart is at variance with the fact that the Dakotas had for a number of years been familiar with fire arms. The most recent indications of any weapon were those of the arrows piercing the Crow squaw in 1857–'58 and Brave-Bear in 1854–'55, while the last one before them was the lance used in 1848–'49, and those arms might well have been employed in all the cases selected for the calendar, although rifles and muskets were common. There is also an obvious practical difficulty in picturing by a single character killing with a bullet, not arising as to arrows, lances, dirks, and hatchets, all of which can be and are in the chart shown projecting from the wounds made by them. Pictographs in the possession of the Bureau of Ethnology show battles in which bullets are denoted by continuous dotted lines, the spots at which they take effect being sometimes indicated. It is, however, to be noted that the bloody wound on the Ree's shoulder (1806–'07) is without any protruding weapon, as if made by a bullet.

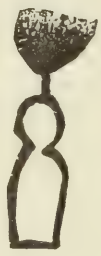


THE DAKOTA WINTER COUNTS.

I

1871–'72.

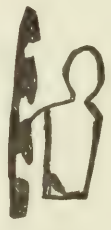
1872–'73.



I

1873–'74.

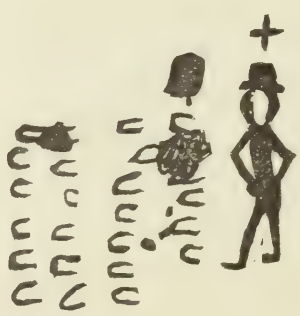
1874–'75.



I

1875–'76.

1876–'77.



No. III. A Crow war party of 30 were surprised and surrounded in the Black Hills by the Dakotas and killed. Fourteen of the Dakotas were killed in the engagement.

1871–'72.—No. I. The-Flame's second son killed by Rees.

1872–'73.—No. I. Sans-Arc-John killed by Rees.

1873–'74.—No. I. Brulés kill a number of Pawnees.

Cloud-Shield says they killed many Pawnees on the Republican River.

1874–'75.—No. I. A Dakota kills one Ree.

1875–'76.—No. I. Council at Spotted Tail Agency.

1876–'77.—No. I. Horses taken by United States Government.

White-Cow-Killer calls it "General-Mackenzie-took-the-Red-Cloud-Indians'-horses-away-from-them winter."

In the account of Lone-Dog's chart, published in 1877, as above mentioned, the present writer, on the subject of the recorder's selection of events, remarked as follows:

"The year 1876 has furnished good store of events for his choice, and it will be interesting to learn whether he has selected as the distinguishing event the victory over Custer, or, as of still greater interest, the general seizure of ponies, whereat the tribes, imitating Rachel, weep and will not be comforted, because they are not."

It now appears that two of the counts have selected the event of the seizure of the ponies, and none of them yet seen make any allusion to the defeat of Custer.

After examination of the three charts it will be conceded that, as above stated, the design is not narrative, the noting of events being subordinated to the marking of the years by them, and the pictographic serial arrangements of sometimes trivial, though generally notorious, incidents, being with special adaptation for use as a calendar. That in a few instances small personal events, such as the birth or death of the recorder or members of his family, are set forth, may be regarded as in the line of interpolations in or unauthorized additions to the charts. If they had exhibited a complete national or tribal history for the years embraced in them, their discovery would have been, in some respects, more valuable, but they are the more interesting to ethnologists because they show an attempt, before unsuspected among the tribes of American Indians, to form a system of chronology.

THE CORBUSIER WINTER COUNTS.

While the present paper was in preparation, a valuable and elaborate communication was received from Dr. William H. Corbusier, assistant surgeon, United State Army, styled by him the Dakota Winter Counts, which title was adopted for the whole subject-matter, including the charts with their interpretations which had before been known to the present writer, and those from Dr. Corbusier, which furnish a different

system, are distinguished by his name. It is necessary to explain that all references in the text to colors, other than black, must be understood as applicable to the originals. Other colors could not be reproduced in the plates without an expense disproportionate to the importance of the colors for significance and comprehension.

A more important explanation is due on account of the necessity to omit from Dr. Corbusier's contribution the figures of Battiste Good's count and their interpretation. This count is in some respects the most important of all those yet made known. As set down by Battiste Good, it begins in a peculiar cyclic computation with the year A. D. 900, and in thirteen figures includes the time to A. D. 1700, all these figures being connected with legends and myths, some of which indicate European influence. From 1700–'01 to 1879–'80 a separate character for each year is given, with its interpretation, in a manner generally similar to those in the other charts. Unfortunately all of these figures are colored, either in whole or in large part, five colors being used besides black, and the drawing is so rude that without the colors it is in many cases unintelligible. The presentation at this time of so large a number of colored figures—in all one hundred and ninety-three—in addition to the other illustrations of the present paper, involved too great expense. It is hoped that this count can be so far revised, with the elimination of unessential coloration and with more precision in the outlines, as to allow of its publication. Several of its characters, with references also to its interpretation when compared with that of other counts, are given in various parts of the present paper. Where it was important to specify their coloration the heraldic scheme has been used.

The pages immediately following contain the contribution of Dr. Corbusier, diminished by the extraction of the parts comprising Battiste Good's count. Its necessary omission, as above explained, is much regretted, not only on account of its intrinsic value, but because without it the work of Dr. Corbusier does not appear to all the advantage merited by his zeal and industry.

The Dakotas reckon time by winters, and apply names to them instead of numbering them from an era. Each name refers to some notable occurrence of the winter or year to which it belongs, and has been agreed upon in council on the expiration of the winter. Separate bands have often fixed upon different events, and it thus happens that the names are not uniform throughout the nation. Ideographic records of these occurrences have been kept in several bands for many years, and they constitute the Dakota Winter-Counts (waníyetu wówapi) or Counts Back (hékta yawapi). They are used in computing time, and to aid the memory in recalling the names and events of the different years, their places in the count, and their order of succession. The enumeration of the winters is begun at the one last recorded and carried backward. Notches on sticks, war-shirts, pipes, arrows, and other de-

vices also serve a mnemonic purpose. The Counts were formerly executed in colors on the hides of animals, but the present recorders make use of paper, books, pens, pencils, and paints obtained from the whites. The alignment of the ideographs depends to some extent upon the material on which they are depicted. On robes it is spiral from right to left and from the center outward, each year being added to the coil as the snail adds to its whorl. The spiral line, frequently seen in etchings on rocks, has been explained to me as indicating a snail shell. On paper they are sometimes carried from right to left, sometimes from left to right, and again the two methods are combined as in Battiste Good's winter-count, which begins at the back of the book and is carried forward, *i. e.*, from right to left, but in which the alignment on each page is from left to right. The direction from right to left is that followed in many of their ceremonies, as when tobacco is smoked as incense to the sun and the pipe is passed around, and when the devotees in the dance to the sun enter and leave the consecrated lodge in which they fulfill their vows.

Among the Oglálas and the Brulés there are at least five of these counts kept by as many different men, each man seeming to be the recorder for his branch of the tribe. I obtained copies of three of them in 1879 and 1880, while stationed at Camp Sheridan, Nebraska, near the Pine Ridge Agency, Dakota. One winter count was made for me by Battiste Good, a Brulé Dakota, at the Rosebud Agency, Dakota, being a copy of the one of which he is the recorder. He explained the meaning of the pictographs to the Rev. William J. Cleveland, of the Rosebud Agency, to whom I am indebted for rendering his explanations into English. Several Indians and half-breeds had informed me that his count formerly embraced about the same number of years as the other two, but that Battiste Good gathered the names of many years from the old people and placed them in chronological order as far back as he was able to learn them.

Another winter count is a copy of the one in the possession of American-Horse, an Oglála Dakota, at the Pine Ridge Agency, who asserts that his grandfather began it, and that it is the production of his grandfather, his father, and himself. I received the explanations from American-Horse through an interpreter.

A third winter count is a copy of one kept by Cloud-Shield. He is also an Oglála Dakota at the Pine Ridge Agency, but of a different band from American-Horse. I also received his explanations through an interpreter. The last two counts embrace nearly the same number of years. I have added the dates to both of them, beginning at the last year, the date of which was known, and carrying them back. Two dates belong to each figure, as a Dakota year covers a portion of two of our calendar years.

I have seen copies of a fourth winter count which is kept by White-

Cow-Killer at the Pine Ridge Agency. I did not obtain a copy of it, but learned most of the names given to the winters.

On comparing the winter counts, it is found that they often correspond, but more frequently differ. In a few instances the differences are in the succession of the events, but in most instances they are due to an omission or to the selection of another event. When a year has the same name in all of them, the bands were probably encamped together or else the event fixed upon was of general interest; and, when the name is different, the bands were scattered or nothing of general interest occurred. Differences in the succession may be due to the loss of a record and the depiction of another from memory, or to errors in copying an old one.

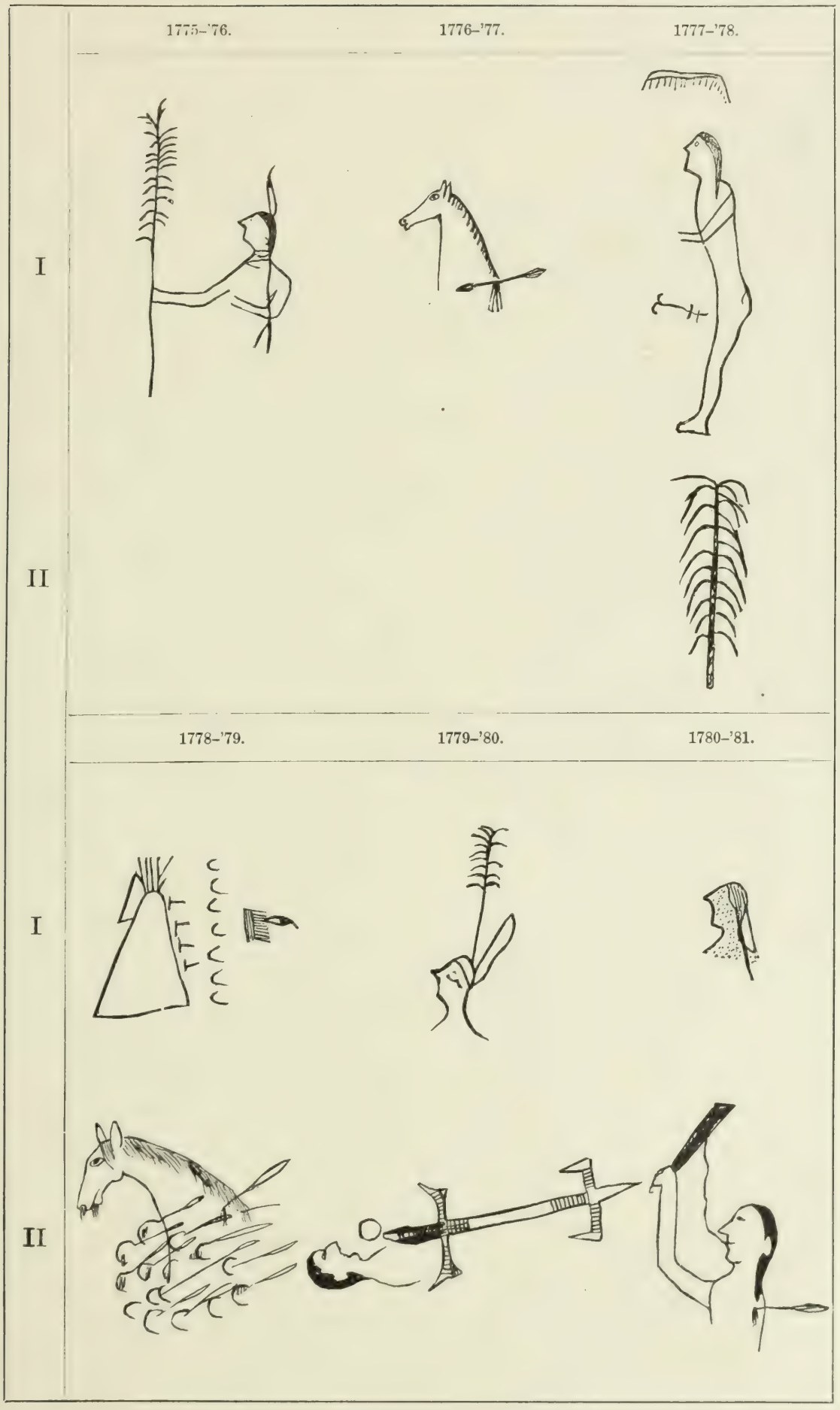
The explanations of the counts are far from complete, as the recorders who furnished them could in many instances recall nothing except the name of the year, and in others were loth to speak of the events or else their explanations were vague and unsatisfactory, and, again, the interpreters were sometimes at fault. Many of the recent events are fresh in the memory of the people, as the warriors who strive to make their exploits a part of the tribal traditions proclaim them on all occasions of ceremony—count their *coups*, as it is called. Declarations of this kind partake of the nature of affirmations made in the presence of God. War-shirts on which scores of the enemies killed are kept, and which are carefully transmitted from one generation to another, help to refresh their memories in regard to some of the events. By testing many Indians I learned that but few could interpret the significance of the figures; some of them could point out the year of their birth and that of some members of their families; others could not do so, or pretended that they could not, but named the year and asked me to point it out and tell their age.

In the following explanation of the winter counts, [figured on Plates XXXIV–LI,] No. I refers to that of American-Horse and No. II to that of Cloud-Shield.

1775–'76.—No. I. Standing-Bull, the great-grandfather of the present Standing-Bull, discovered the Black Hills. He carried home with him a pine tree of a species he had never seen before. (In this count the Dakotas are usually distinguished by the braided scalp-lock and the feather they wear at the crown of the head, or by the manner in which they brush back and tie the hair. It will be noticed that the profile of most of the faces is given, whereas Battiste Good gives the full face. The Dakotas have of late years claimed the Black Hills, probably by right of discovery in 1775–'76; but the Crows were the former possessors.)

This is also the first winter of White-Cow-Killer's count and is called "Two-warriors-killed winter."

1776–'77.—No. I. Many of their horses were killed by some of their own people, who were jealous because they were fatter than their own.

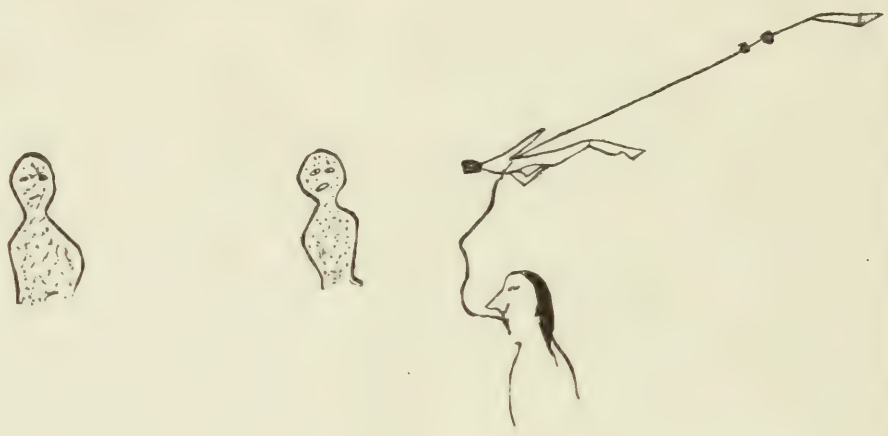


THE CORBUSIER WINTER COUNTS.

1781–'82. 1782–'83. 1783–'84.

I

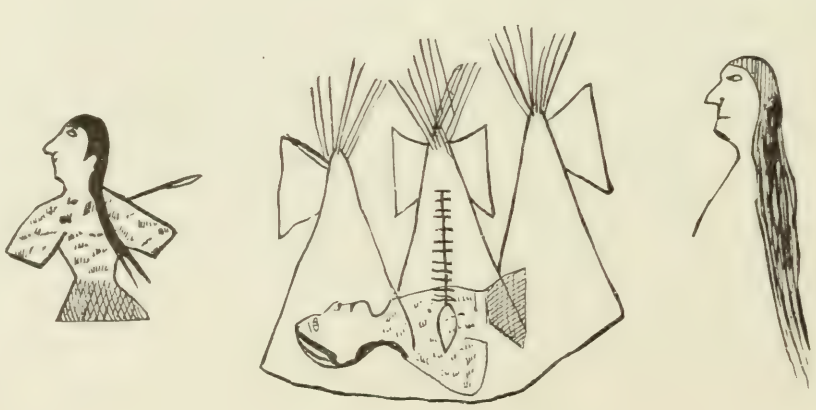
II



1784–'85. 1785–'86. 1786–'87.

I

II



THE CORBUSIER WINTER COUNTS.

1777–'78.—No. I. It was an intensely cold winter, and the Man-who-has-no-skin-on-his-penis froze to death. The sign for snow or winter, *i. e.*, a cloud with snow falling from it, is above his head. A haka-stick, which, in playing that game, they cast after a ring, is represented in front of him.

Battiste Good's record is that a Dakota named Skinned-Penis was killed in a fight with the Pawnees, and his companions left his body where they supposed it would not be found, but the Pawnees found it, and as it was frozen stiff, they dragged it into their camp and played haka with it.

No. II. A war party brought in the lone pine tree from the enemy's country. They met no enemies while out. This event is also the first in No. I, in which it marks the winter of 1775–'76.

1778–'79.—No. I. The Ponkas came and attacked a village, notwithstanding peace had just been made with them. The people repulsed and followed them, killing sixty. Some elk-hair and a feather represent Ponka. Horse tracks are used for horses. Attack is indicated by signs which were said to represent bullet marks, and which convey the idea that the bullet struck. The sign seems to be derived from the gesture-sign for "it struck."

No. II. Many of their horses were killed, but by whom is not known. The same event is recorded in No. I, 1776–'77.

1779–'80.—No. I. Long-Pine was killed in a fight with the Crows. The absence of his scalp denotes that he was killed by an enemy. The wound was made with the bow and arrow.

No. II. Skinned-his-penis was used in the ring-and-pole game.

1780–'81.—No. I. Many died of small-pox.

No. II. "The policeman" was killed by the enemy.

1781–'82.—No. I. Many died of small-pox.

No. II. Many people died of small-pox. They all record two successive winters of small-pox, but No. I makes the first year of the epidemic one year later than that of Battiste Good, and No. II makes it two years later.

1782–'83.—No. I. A Dakota named Stabber froze to death. The sign for winter is the same as before.

No. II. Many people died of small-pox again.

1783–'84.—No. I. The Mandans and Rees made a charge on a Dakota village. The Dakotas drove them back, killed twenty five of them, and captured a boy. An eagle's tail, which is worn on the head, stands for Mandan and Ree.

No. II. The-Stabber froze to death. The man's name is suggested by the spear in the body over his head, which is connected with his mouth by a line.

White-Cow-Killer calls it "Big-fire winter," possibly because big fires were required to keep them warm.

1784–'85.—No. I. A young man who was afflicted with the small-pox,

and was in his tipi, off by himself, sang his death-song and shot himself. Suicide is more common among Indians than is generally suspected, and even boys sometimes take their own lives. A Dakota boy at one of the agencies shot himself rather than face his companions after his mother had whipped him, and a Pai-Ute boy at Camp McDermit, Nevada, tried to poison himself with the wild parsnip because he was not well and strong like the other boys. The Pai-Utes usually eat the wild parsnip when bent on suicide.

No. II. An Omaha woman who was living with the Oglálas attempted to run away from them, and they killed her. A war between the two tribes was the result.

1785–'86.—No. I. Bear's-Ears, a Brulé, was killed in an Oglála village by the Crows.

No. II. The Oglálas killed three lodges of Omahas.

1786–'87.—No. I. Broken-Leg-Duck, an Oglála, went to a Crow village to steal horses and was killed. A line connects the name with the mouth.

No. II. Long-Hair was killed. To what tribe he belonged is not known.

1787–'88.—No. I. They went out in search of the Crows in order to avenge the death of Broken-Leg-Duck. They did not find any Crows, but, chancing on a Mandan village, captured it and killed all the people in it.

No. II. A year of famine. They lived on roots, which are represented in front of the tipi.

1788–'89.—No. I. Last-Badger, an Oglála, was killed by the Rees.

No. II. The winter was so cold that many crows froze to death.

White-Cow-Killer calls 1787–'88 "Many-black-crows-died winter."

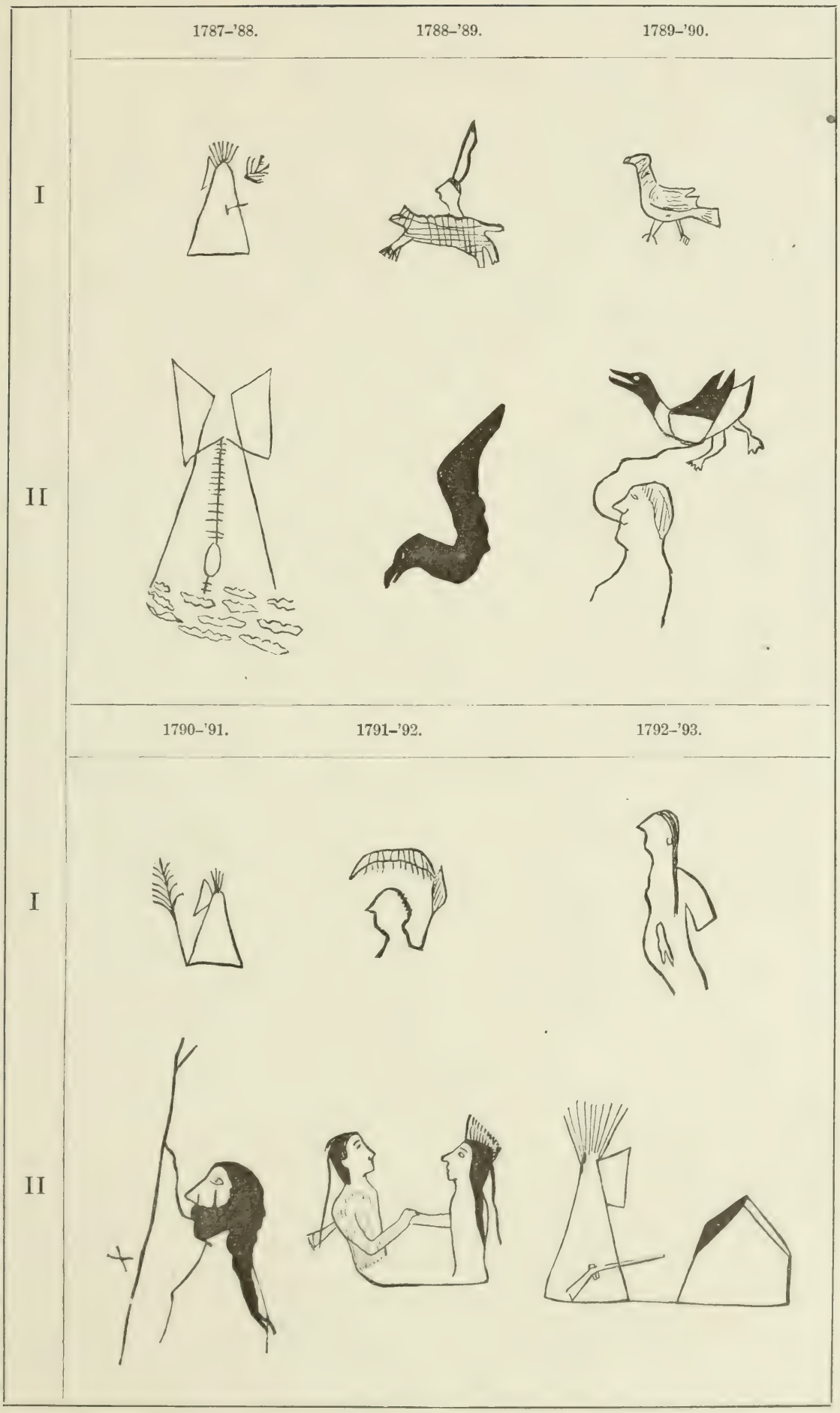
1789–'90.—No. I. The cold was so intense that crows froze in the air and dropped dead near the lodges.

No. II. White-Goose was killed in an attack made by some enemies.

White-Cow-Killer calls it "Goose-Feather-killed winter."

1790–'91.—No. I. They could not hunt on account of the deep snow, and were compelled to subsist on anything they could get, as herbs (pézi) and roots.

No. II. Picket-Pin went against the Cheyennes. A picket-pin is represented in front of him and is connected with his mouth by the usual line. The black band across his face denotes that he was brave and had killed enemies. The cross is the symbol for Cheyenne. The mark used for Cheyenne stands for the scars on their arms, or stripes on their sleeves, which also gave rise to the gesture sign for this tribe, given in Sign Language among the North American Indians, etc., First Annual Report of the Bureau of Ethnology, p. 465, viz.: Draw the extended right index, or the inner edge of the open right hand, several times across the base of the extended left index or across the left forearm at different heights.



THE CORBUSIER WINTER COUNTS.

1793–'94. 1794–'95. 1795–'96.

I

II

1796–'97. 1797–'98. 1798–'99.

I

II

THE CORBUSIER WINTER COUNTS

White-Cow-Killer calls it "All-the-Indians-see-the-flag winter."

1791–'92.—No. I. Glue, an Oglála, froze to death on his way to a Brulé village. A glue-stick is represented back of his head. Glue, made from the hoofs of buffalo, is used to fasten arrow-heads on, and is carried about on sticks.

No. II. The Dakotas and Omahas made peace.

1792–'93.—No. I. Many women died in child-birth.

No. II. The Dakotas camped on the Missouri River near the Gros Ventres and fought with them a long time. The Dakota tipi and the Gros Ventre lodge are shown in the figure.

White-Cow-Killer calls it "Rees-house-winter."

1793–'94.—No. I. A Ponka who was captured when a boy by the Oglálas was killed while outside the village by a war party of Ponkas.

No. II. Bear's-Ears was killed in a fight with the Rees.

White-Cow-Killer calls it "Little-Face-killed winter."

1794–'95.—No. I. The-Good-White-Man came with two other white men. He promised that if they would let him and his companions go undisturbed he would return and bring with him weapons with which they could kill game with but little labor. They gave them buffalo robes and dogs to pack them on and sent the party off. The sign for white man is a hat, either by itself or on a head, and the gesture-sign indicates one who wears a hat. Draw the open right hand horizontally from left to right across the forehead a little above the eyebrows, the back of the hand to be upward and the fingers pointing toward the left, or draw the index across the forehead in the same manner.

No. II. Bad-Face, a Dakota, was shot in the face.

White-Cow-Killer calls it "Long-Hair-killed winter."

1795–'96.—No. I. The-Man-Who-Owns-the-Flute was killed by the Cheyennes. His flute is represented in front of him with sounds coming from it. A bullet mark is on his neck.

No. II. The Dakotas camped near the Rees and fought with them.

White-Cow-Killer calls it "Water-Stomach-killed winter."

1796–'97.—No. I. They killed the long-haired man in a fight with the Cheyennes while on an expedition to avenge the death of The-Man-Who-Owns-the-Flute, who was killed by the Cheyennes the year before.

No. II. Badger, a Dakota, was killed by enemies, as shown by the absence of his scalp.

White-Cow-Killer calls it "War-Bonnet-killed winter."

1797–'98.—No. I. Little-Beaver and three other white men came to trade, having been sent by the Good-White-Man. Their goods were loaded on three sleds, each drawn by six dogs.

No. II. The-Wise-Man was killed by enemies.

White-Cow-Killer calls it "Caught-the-medicine-god-woman-winter."

1798–'99.—No. I. Owns-the-Pole, the leader of an Oglála war party, brought home many Cheyenne scalps. The cross stands for Cheyenne.

No. II. Many women died in child-birth.

White-Cow-Killer says, "Many-squaws-died winter."

1799–1800.—No. 1. The-Good-White-Man returned and gave guns to the Dakotas. The circle of marks represents the people sitting around him, the flint-lock musket the guns.

No. II. A woman who had been given to a white man by the Dakotas was killed because she ran away from him. [See No. I, 1804–'05.]

White-Cow-Killer says, "The-Good-White-Man-came winter."

1800–'01.—No. I. Nine white men came to trade with them. The covered head with short hair stands for a white man and also intimates that the eight dots over it are for white men. According to this count the first whites came in 1794–'95.

No. II. The Good-White-Man came. He was the first white man to trade and live with the Dakotas.

White-Cow-Killer calls it "Don't-Eat-Heart-makes-a-god-house winter."

1801–'02.—No. I. The Oglálas, Brulés, Minneconjous, Sans Arcs, and Cheyennes united in an expedition against the Crows. They surprised and captured a village of thirty lodges, killed all the men, and took the women and children prisoners. The three tipis stand for thirty; the red spots are for blood.

No. II. A trader brought them their first guns.

White-Cow-Killer says, "All-sick-winter."

1802–'03.—No. I. The Ponkas attacked two lodges of Oglálas, killed some of the people, and made the rest prisoners. The Oglálas went to the Ponka village a short time afterward and took their people from the Ponkas. In the figure an Oglála has a prisoner by the arm leading him away. The arrow indicates that they were ready to fight.

No. II. The Omahas made an assault on a Dakota village. Arrows and bullets are flying back and forth.

White-Cow-Killer calls it "Brought-in-horse-shoes winter."

1803–'04.—No. I. They made peace with the Gros Ventres.

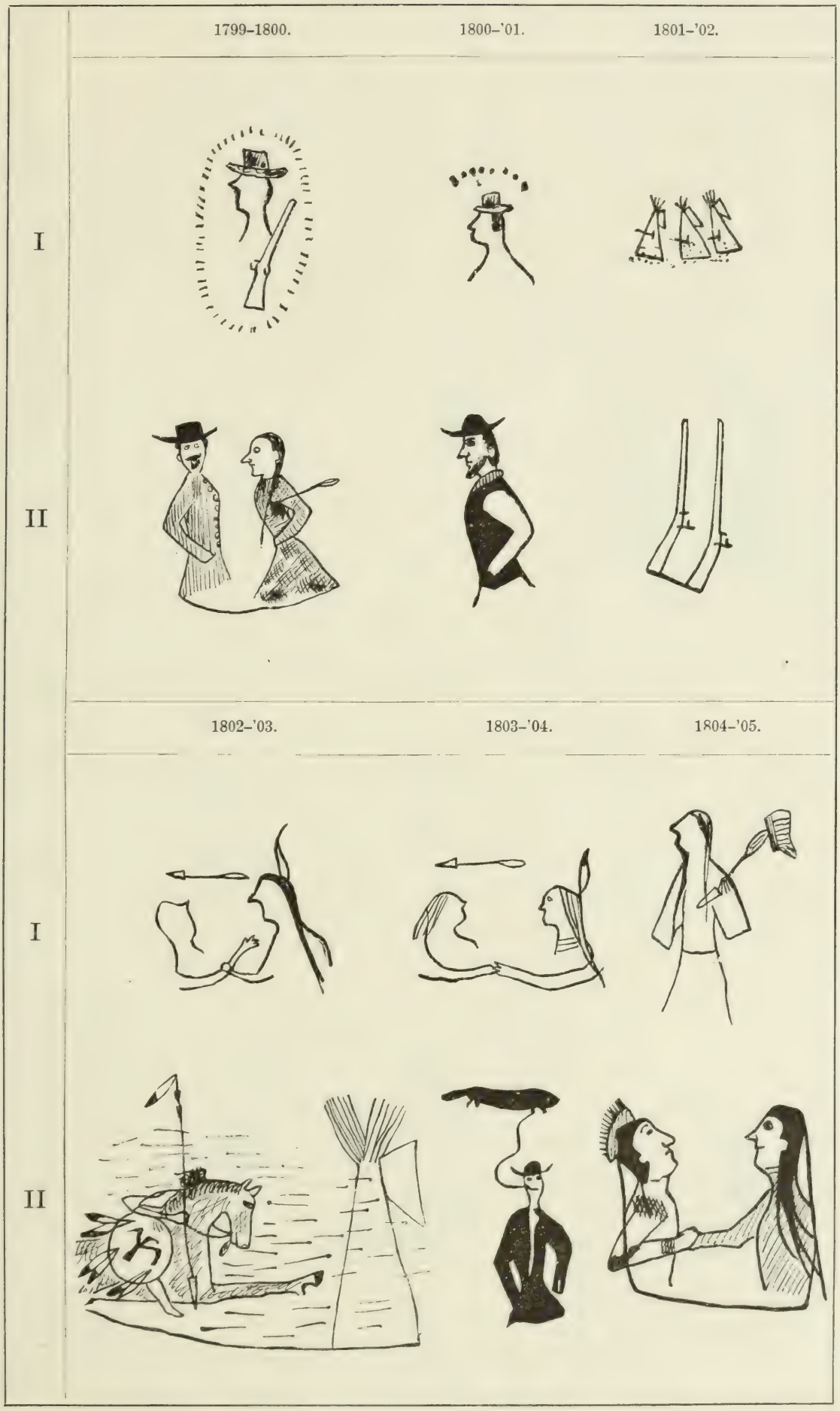
No. II. Little-Beaver, a white trader, came.

White-Cow-Killer calls it "Plenty-of-woolly-horses winter."

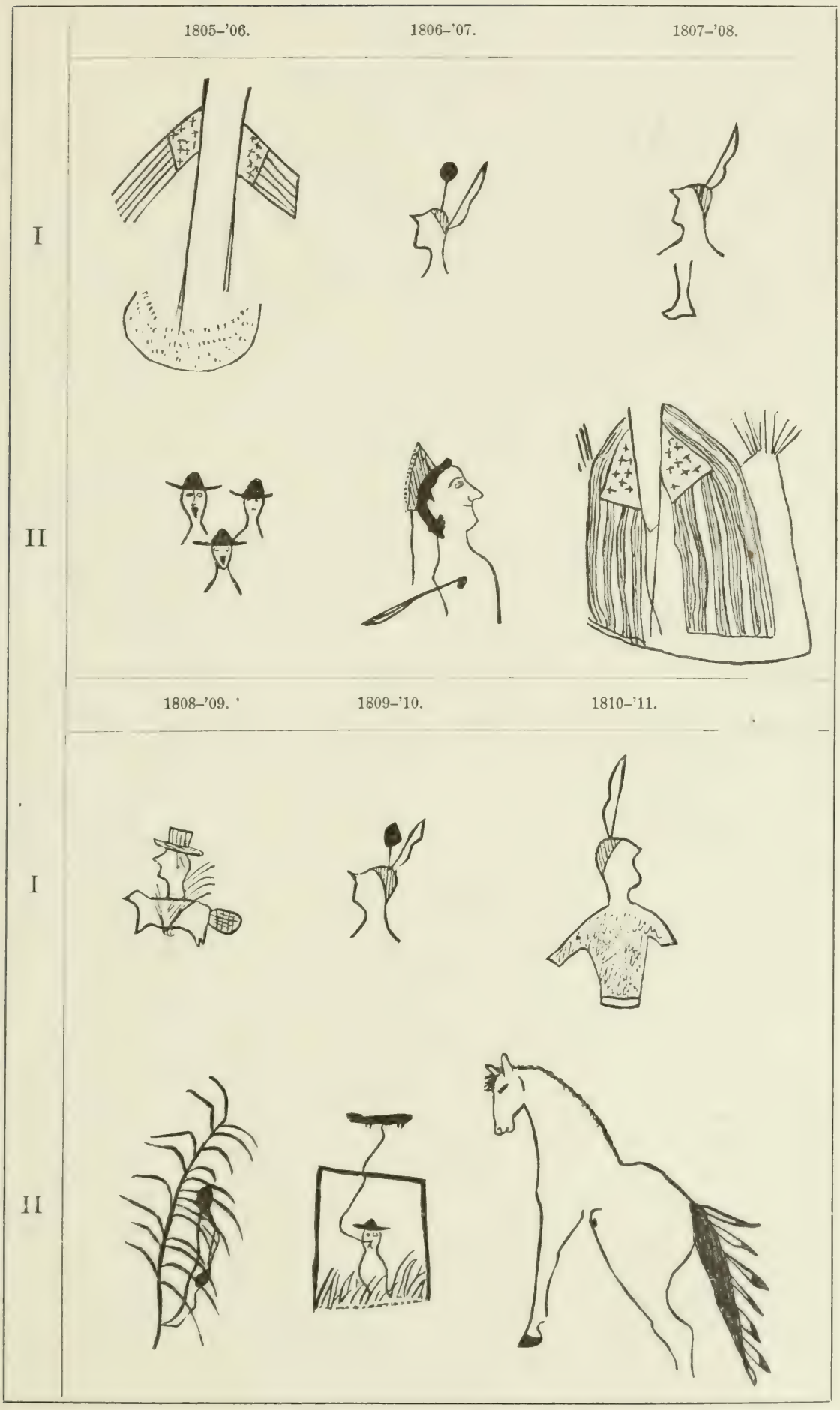
1804–'05.—No. I. An Indian woman who had been unfaithful to a white man to whom she was married was killed by an Indian named Ponka. The symbol for Ponka indicates the name.

No. II. The Omahas came and made peace to get their people, whom the Dakotas held as prisoners.

1805–'06.—No. I. The Dakotas had a council with the whites on the Missouri River, below the Cheyenne Agency, near the mouth of Bad Creek (the Lewis and Clarke Expedition?). They had many flags, which the Good-White-Man gave them with their guns, and they erected them on poles to show their friendly feelings. The curved line is to represent the council lodge, which they made by opening several tipis and uniting them at their sides to form a semicircle. The marks are for the people. American-Horse's father was born this year.



THE CORBUSIER WINTER COUNTS.



THE CORBUSIER WINTER COUNTS.

	1811–'12.	1812–'13.	1813–'14.
I			
II			

	1814–'15.	1815–'16.	1816–'17.
I			
II			

THE CORBUSIER WINTER COUNTS.

No. II. Nine white men came to trade. The three covered heads represent the white men.

White-Cow-Killer calls it "Eight-Dakotas-killed winter."

1806–'07.—No. I. Black-Rock, a Dakota, was killed by the Crows. A rock is represented above his head. He was killed with a bow and arrow and was scalped.

No. II. The Dakotas killed an Omaha in the night.

White-Cow-Killer calls it "Killed-while-hunting-eagles winter."

1807–'08.—No. I. Broken-Leg was killed by the Pawnees. His leg had been broken by a bullet in a previous fight with the Pawnees.

No. II. Many people camped together and had many flags flying.

White-Cow-Killer calls it "Red-shirt-killed Winter."

1808–'09.—No. I. Little-Beaver's trading house was burned down.

No. II. A Brulé was found dead under a tree which had fallen on him.

White-Cow-Killer calls it "Blue-Blanket's-father-dead winter."

1809–'10.—No. I. Black-Rock was killed by the Crows. His brother, whose name he had taken, was killed by the Crows three years before.

No. II. Little-Beaver's house was burned.

White-Cow-Killer says, "Little-Beaver's (the white man) house-burned-down winter."

1810–'11.—No. I. Red-Shirt, a Dakota, was killed by the Crows while looking for his ponies near Old Woman's Fork.

No. II. They brought in a fine horse with feathers tied to his tail.

White-Cow-Killer calls it "Came-with-medicine-on-horse's-tail winter."

1811–'12.—No. I. They caught many wild horses south of the Platte River.

No. II. They had very little buffalo meat, as the empty drying pole indicates, but plenty of ducks in the fall.

White-Cow-Killer calls it "Catching-wild-horses winter."

1812–'13.—No. I. Big-Waist's father killed.

No. II. Big-Owl killed.

White-Cow-Killer calls it "Big-Belly's-father-killed winter."

1813–'14.—No. I. Many had the whooping-cough. The cough is represented by the lines issuing from the man's mouth.

No. II. Food was very scarce and they had to live on acorns. The tree is intended for an oak and the marks beneath it for acorns.

White-Cow-Killer calls it "Six-Rees-killed winter."

1814–'15.—No. I. The Dakotas went to a Kaiowa village, about 6 miles from Scott's Bluff, and near the mouth of Horse Creek, to treat for peace; but their intentions were frustrated by one of their number, who drove his hatchet into a Kaiowa's head.

No. II. They made peace with the Pawnees. The man with the blue forehead is a Pawnee, the other is a Dakota, whose body is smeared with clay. The four arrows show that they had been at war, and the clasped hands denote peace.

White Cow-Killer calls it "Kaiowa-hit-on-head-with-axe winter."

Young-Man's-Horses-Afraid, *i. e.*, whose horses are afraid, was born this year. He is now called "Old-Man-afraid-of-his-Horses" by the whites, and his son, the present chief of the Oglálas, is known as "Young-Man-afraid-of-his-Horses." [The present writer has heard another interpretation about "afraid-of-his-horses," *i. e.*, that the man valued his horses so much that he was afraid of losing them. The present representative of the name, however, stated to the writer that the true meaning was "The-young-man-whose-horses-they-fear."]

1815–'16.—No. I. The figure is intended to represent a white man's house.

No. II. Some of the Dakotas built a large house and lived in it during the winter.

White-Cow-Killer calls it "Made-a-house winter."

1816–'17.—No. I. They made peace with the Crows at Pine Bluff. The arrow shows they had been at war.

No. II. They lived in the same house that they did last winter.

White-Cow-Killer calls it "Made-a-house winter."

1817–'18.—No. I. The Oglálas had an abundance of buffalo meat and shared it with the Brulés, who were short of food. The buffalo hide hung on the drying pole, with the buffalo head above it, indicates an abundance of meat.

No. II. The-Brave-Man was killed in a great fight. The fight is shown by the arrows flying to and from him. Having been killed by an enemy, he is scalped.

White-Cow-Killer calls it "Plenty-of-meat winter."

1818–'19.—No. I. A large house was built.

No. II. Many died of the small-pox.

White-Cow-Killer calls it "Little-small-pox winter."

1819–'20.—No. I. Another house was built. The Dakotas made medicine in it.

No. II. In an engagement with the Crows, both sides expended all of their arrows, and then threw dirt at each other. A Crow is represented on the right, and is distinguished by the manner in which the hair is worn.

White-Cow-Killer calls it "Made-a-house-of-old-wood winter."

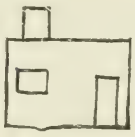
1820–'21.—No. I. The Dakotas assaulted and took a Crow village of a hundred lodges. They killed many and took many prisoners.

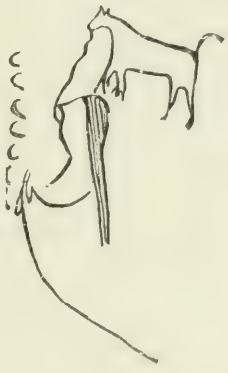
No. II. A Dakota, named Glue, froze to death.

White-Cow-Killer calls it "Two-arrows-made-a-war-bonnet winter."

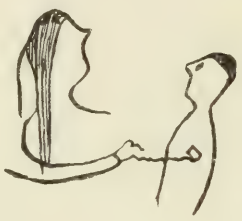
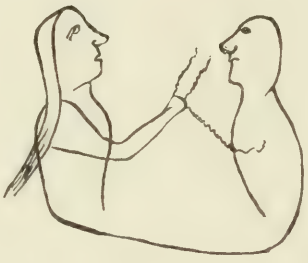
1821–'22.—No. I. They had all the *mini wakan* (spirit water or whisky) they could drink. They never had any before. A barrel with a waved or spiral line running from it represents the whisky, the waved line signifying spirit.

No. II. A large roaring star fell. It came from the east, and shot out sparks of fire along its course. Its track and the sparks are shown in the figure. See also page 111.

	1817–'18.	1818–'19.	1819–'20.
I			
II			

	1820–'21.	1821–'22.	1822–'23.
I			
II			

THE CORBUSIER WINTER COUNTS.

	1823–'24.	1824–'25.	1825–'26.
I			
II			

	1826–'27.	1827–'28.	1828–'29.
I			
II			

THE CORBUSIER WINTER COUNTS.

White-Cow-Killer says, "One-star-made-a-great-noise winter."

Battiste Good, alias Wa-po-ctan-qi (Brown-Hat), historian and chief, designated this year as that of his birth. Omaha bullets were whizzing through the village and striking and piercing his mother's lodge as she brought him forth. Red-Cloud also was born.

1822–'23.—No. I. Dog, an Oglála, stole seventy horses from the Crows. Each of the seven tracks stands for ten horses. A lariat, which serves the purpose of a long whip, and is usually allowed to trail on the ground, is shown in the man's hand.

No. II. A Brulé, who had left the village the night before, was found dead in the morning outside the village, and the dogs were eating his body. The black spot on the upper part of the thigh shows he was a Brulé.

White-Cow-Killer says, "White-man-peels-the-stick-in-his-hand-broke-his-leg winter."

1823–'24.—No. I. They had an abundance of corn, which they got at the Ree villages.

No. II. They joined the whites in an expedition up the Missouri River against the Rees.

White-Cow-Killer calls it "Old-corn-plenty winter." For further explanation of the record of this year, see page 111.

1824–'25.—No. I. Cloud-Bear, a Dakota, killed a Dakota, who was a long distance off, by throwing a bullet from his hand and striking him in the heart. The spiral line is again used for *wakan*. The gesture-sign for *wakan* (holy, supernatural) is: With its index-finger extended and pointing upward, or all the fingers extended, back of hand outward, move the right hand from just in front of the forehead spirally upward nearly to arm's length from left to right. [See "Sign Language N. A. Indians," p. 380, by the present writer, in the First Annual Report of the Bureau of Ethnology.]

No. II. Cat-Owner was killed with a spider-web thrown at him by a Dakota. The spider-web is shown reaching to his heart from the hand of the man who threw it. The blood issuing from his mouth and nose indicates that he bled to death. It is a common belief among them that certain medicine men possess the power of taking life by shooting needles, straws, spider-webs, bullets, and other objects, however distant the person may be against whom they are directed.

White-Cow-Killer calls it "Killed-the-women-picking-cherries winter."

1825–'26.—No. I. Some of the Dakotas were living on the bottom-lands of the Missouri River, below the Whetstone, when the river, which was filled with broken ice, unexpectedly rose and flooded their village. Many were drowned or else killed by the floating ice. Many of those that escaped climbed on cakes of ice or into trees.

No. II. Many of the Dakotas were drowned in a flood caused by a rise of the Missouri River, in a bend of which they were camped. The

curved line is the bend in the river; the waved line is the water, above which the tops of the tipis are shown.

White-Cow-Killer calls it "Great-flood-and-many-Indians-drowned winter." [See page 113.]

1826–'27.—No. I. The brother of the Good-White-Man came.

No. II. Held a commemoration of the dead. The pipe-stem and the skull indicate this.

White-Cow-Killer calls it "Long-Whistle-sick winter."

1827–'28.—No. I. The snow was very deep.

No. II. In a fight with the Mandans, Crier was shot in the head with a gun.

White-Cow-Killer calls it "Snow-shoe-making winter."

1828–'29.—No. I. They provided themselves with a large supply of antelope meat by driving antelope into a corral, in which they were easily killed.

No. II. They drove many antelope into a corral and then killed them.

White-Cow-Killer calls it "Many-Rees-killed winter."

1829–'30.—No. I. Striped-Face stabbed and killed his son-in-law for whipping his wife.

No. II. Spotted-Face stabs his son-in-law for whipping his wife.

White-Cow-Killer calls it "Spotted-Face-held-on-long winter."

1830–'31.—No. I. They saw wagons for the first time. Red-Lake, a white trader, brought his goods in them.

No. II. The Crows were approaching a village at a time when there was a great deal of snow on the ground and intended to surprise it, but some herders discovering them the Dakotas went out, laid in wait for the Crows, surprised them, and killed many. A Crow's head is represented in the figure.

White-Cow-Killer calls it "Killed-many-white-buffalo winter."

1831–'32.—No. I. Red-Lake's house, which he had recently built, was destroyed by fire, and he was killed by the accidental explosion of some powder.

No. II. A white man, whom they called Gray-Eyes, shot and killed a man who was working for him.

1832–'33.—No. I. They killed many Gros Ventres in a village which they assaulted.

No. II. All of Standing-Bull's horses were killed, but by whom is unknown. Hoof-prints, blood-stains, and arrows are shown under the horse.

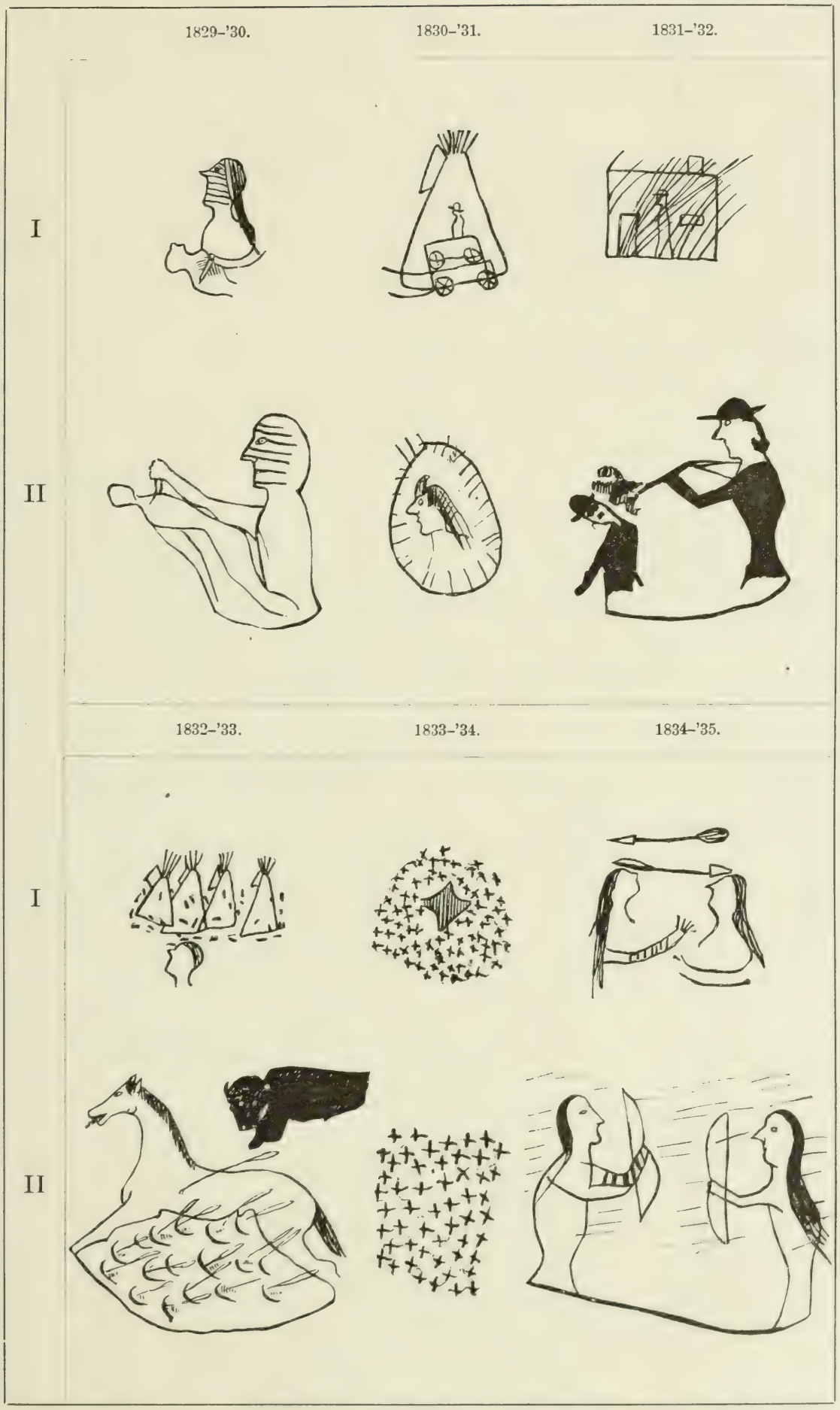
White-Cow-Killer calls it "One-Horn's-leg-broken winter."

1833–'34.—No. I. The stars moved around.

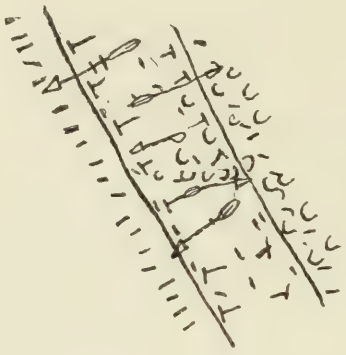
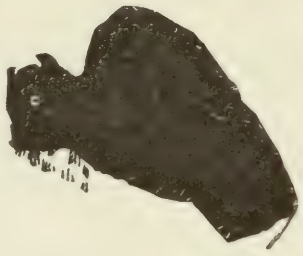
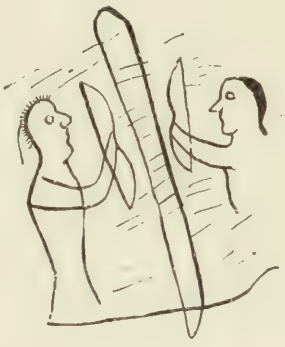
No. II. It rained stars.

White-Cow-Killer calls it "Plenty-stars winter."

The records [see page 116] all undoubtedly refer to the magnificent meteoric display of the morning of November 13th, 1833, which was witnessed throughout North America, and which they have correctly as-



THE CORBUSIER WINTER COUNTS.

	1835–'36.	1836–'37.	1837–'38.
I			
II			

	1838–'39.	1839–'40.	1840–'41.
I			
II			

signed to the winter corresponding with that of 1833–'34. All of them represent stars as having four points.

1834–'35.—No. I. They were at war with the Cheyennes. The Cheyenne is the one with the stripes on his arm.

No. II. They fought with the Cheyennes. The stripes on the arm are for Cheyenne as before.

White-Cow-Killer calls it "Cheyennes-came-and-one-killed winter."

1835–'36.—No. I. They killed a very fat buffalo bull.

No. II. They killed a very fat buffalo bull.

White-Cow-Killer calls it "Two warriors-killed winter."

1836–'37.—No. I. The Dakotas and the Pawnees fought on the ice on the North Platte River. The former were on the north side, the right-hand side in the figure, the latter on the south side, the left in the figure. Horsemen and footmen on the right are opposed to footmen on the left. Both sides have guns and bows, as shown by the bullet-marks and the arrows. The red marks are for blood-stains on the ice.

No. II. They fought the Pawnees across the ice on the North Platte. The man on the left is a Pawnee.

White-Cow-Killer calls it "Fight-on-ice winter."

1837–'38.—No. I. Paints-His-Cheeks-Red and his family, who were camping by themselves, were killed by Pawnees.

No. II. Paints-His-Face-Red, a Dakota, was killed in his tipi by the Pawnees.

White-Cow-Killer calls it "Five-Fingers-died winter."

1838–'39.—No. I. Spotted-Horse carried the pipe around and took the war path against the Pawnees, to avenge the death of his uncle, Paints-His-Cheeks-Red.

No. II. Crazy-Dog, a Dakota, carried the pipe around and took the war path. The waved or spiral lines denote crazy.

White-Cow-Killer says, "Paints-his-Chin's-lodge all-killed winter."

When a warrior desires to make up a war party he visits his friends and offers them a filled pipe as an invitation to follow him, and those who are willing to go accept the invitation by lighting and smoking it. Any man whose courage has been proved may become the leader of a war party. Among the Arapahos the would-be leader does not invite any one to accompany him, but publicly announces his intention of going to war. He fixes the day for his departure and states where he will camp the first night, naming some place not far off. The morning on which he starts, and before leaving the village, he invokes the aid of the sun, his guardian by day, and often, to propitiate him, secretly vows to undergo penance, or offer a sacrifice on his return. He rides off alone, carrying his bare pipe in his hand, with the bowl carefully tied to the stem to prevent it from slipping off. If the bowl should at any time accidentally fall to the ground, he considers it an evil omen, and immediately returns to the village, and nothing could induce him to proceed, as he thinks that only misfortune would attend him if he did. Some-

times he ties eagle or hawk plumes to the stem of his pipe, and, after quitting the village, repairs to the top of some hill and makes an offering of them to the sun, taking them from his pipe and tying them to a pole, which he erects in a pile of stones. (Some of the stone-heaps seen on the hills in the Arapaho country originated in this way, but most of them were made by dreamers, who withdraw from their people to devote themselves in solitude to contemplation, fasting, and prayer, in order to work themselves into a state of rapture, hoping to have visions and receive messages from spirits.) Those who intend to follow him usually join him at the first camp, equipped for the expedition; but often there are some who do not join him until he has gone further on. He eats nothing before leaving the village, nor as long as the sun is up; but breaks his fast at his first camp, after the sun sets. The next morning he begins another fast, to be continued until sunset. He counts his party, saddles his horse, names some place six or seven miles ahead, where he says he will halt for awhile, and again rides off alone with his pipe in his hand. After awhile the party follow him in single file. When they have reached his halting place he tells them to dismount and let their horses graze. They all then seat themselves on the ground on the left of the leader, forming a semicircle, facing the sun. The leader fills his pipe, all bow their heads, and, pointing the stem of the pipe upward, he prays to the sun, asking that they may find an abundance of game, that dead-shots may be made, so that their ammunition will not be wasted, but reserved for their enemies; that they may easily find their enemies and kill them; that they may be preserved from wounds and death. He makes his petition four times, then lights his pipe, and after sending a few whiffs of smoke skyward as incense to the sun, hands the pipe to his neighbor, who smokes and passes it on to the next. It is passed from one to another, toward the left, until all have smoked, the leader refilling it as often as necessary. They then proceed to their next camp, where probably others join them. The same programme is carried out for three or four days before the party is prepared for action.

1839–'40.—No. I. Left-Handed-Big-Nose was killed by the Shoshoni. His left arm is represented extended, and his nose is very conspicuous. American-Horse was born in the spring of 1840.

No. II. They killed a Crow and his squaw, who were found on a trail.

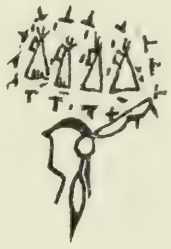
White-Cow-Killer calls it "Large-war-party-hungry-eat-Pawnee-horses winter."

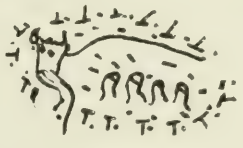
1840–'41.—No. I. Sitting-Bear, American-Horse's father, and others, stole two hundred horses from the Flat Heads. A trailing lariat is in the man's hand.

No. II. They stole one hundred (many) horses from the Snakes.

White-Cow-Killer calls it "Little-Thunder's-brothers-killed winter."

1841–'42.—No. I. The Oglálas engaged in a drunken brawl, which re-

	1841–'42.	1842–'43.	1843–'44.
I			
II			

	1844–'45.	1845–'46.	1846–'47.
I			
II			

THE CORBUSIER WINTER COUNTS.

sulted in a division of the tribe, the Kiyuksas (Cut-Offs) separating from the others.

No. II. The Oglálas got drunk on Chug Creek, and engaged in a quarrel among themselves, in which Red-Cloud's brother was killed, and Red-Cloud killed three men. Cloud-Shield (Mahpiya-Wahacanka) was born.

1842–'43.—No. I. Feather-Ear-Rings was killed by the Shoshoni. The four lodges and the many blood-stains intimate that he was killed at the time the four lodges of Shoshoni were killed.

No. II. Lone-Feather said his prayers, and took the war path to avenge the death of some relatives.

White-Cow-Killer calls it "Crane's-son-killed winter."

1843–'44.—No. I. The great medicine arrow was taken from the Pawnees by the Oglálas and Brulés, and returned to the Cheyennes, to whom it rightly belonged.

No. II. In a great fight with the Pawnees they captured the great medicine arrow which had been taken from the Cheyennes, who made it, by the Pawnees. The head of the arrow projects from the bag which contains it. The delicate waved lines (intended probably for spiral lines) show that it is sacred.

White-Cow-Killer calls it "The Great-medicine-arrow-comes-in winter."

Battiste Good's record gives the following for the same year:

"Brought-home-the-magic arrow winter. This arrow originally belonged to the Cheyennes, from whom the Pawnees stole it. The Dakotas captured it this winter from the Pawnees, and the Cheyennes then redeemed it for one hundred horses." His sign for the year is somewhat different, as shown in Figure 46. As before menticned, an attempt is made to distinguish colors by the heraldic scheme, which in this instance may require explanation. The upper part of the body is sable or black, the feathers on the arrow are azure or blue, and the shaft, gules or red. The remainder of the figure is of an undecided color not requiring specification.

FIG. 46.—Magic arrow.

1844–'45.—No. I. Male-Crow, an Oglála, was killed by the Shoshoni.

No. II. Crazy-Horse says his prayers and goes on the war path. The waved lines are used again for crazy.

White-Cow-Killer calls it "White-Buffalo-Bull-killed by-the-Crows winter."

1845–'46.—No. I. White-Bull and thirty other Oglálas were killed by the Crows and Shoshoni.

No. II. White-Bull and many others were killed in a fight with the Shoshoni.

White-Cow-Killer calls it "Many-sick winter."

1846–'47.—No. I. Big-Crow and Conquering-Bear had a great feast and gave many presents.

No. II. Long-Pine, a Dakota, was killed by Dakotas. He was not killed by an enemy, as he has not lost his scalp.

White-Cow-Killer calls it "Diver's-neck-broken winter."

1847–'48.—No. I. There were a great many accidents and some legs were broken, the ground being covered with ice.

No. II. Many were thrown from their horses while surrounding buffalo in the deep snow, and some had their legs-broken.

White-Cow-Killer calls it "Many-legs-broken winter."

1848–'49.—No. I. American-Horse's father captured a Crow who was dressed as a woman, but who was found to be an hermaphrodite and was killed.

No. II. American-Horse's father captured a Crow woman and gave her to the young men, who discovered that she was an hermaphrodite and killed her.

White-Cow-Killer calls it "Half-man-and-half-woman-killed winter."

It is probable that this was one of those men, not uncommon among the Indian tribes, who adopt the dress and occupation of women. [This is sometimes compulsory, *e. g.*, on account of failure to pass an ordeal.]

1849–'50.—No. I. Many died of the cramps. The cramps were those of Asiatic cholera, which was epidemic in the United States at that time, and was carried to the plains by the California and Oregon emigrants. The position of the man is very suggestive of cholera.

No. II. Making-the-Hole stole many horses from a Crow tipi. The index points to the hole, which is suggestive of the man's name.

White-Cow-Killer calls it "The-people-had-the-cramps winter."

1850–'51.—No. I. Wolf-Robe was killed by the Pawnees.

No. II. Many died of the small-pox.

White-Crow-Killer calls it "All-the-time-sick-with-the-big-small-pox winter."

1851–'52.—No. I. They received their first annuities at the mouth of Horse Creek. A one-point blanket is depicted and denotes dry-goods. It is surrounded by a circle of marks which represent the people.

No. II. Many goods were issued to them at Fort Laramie. They were the first they received. The blanket which is represented stands for the goods.

White-Cow-Killer calls it "Large-issue-of-goods-on-the-Platte-River winter."

1852–'53.—No. I. The Cheyennes carry the pipe around to invite all the tribes to unite with them in a war against the Pawnees.

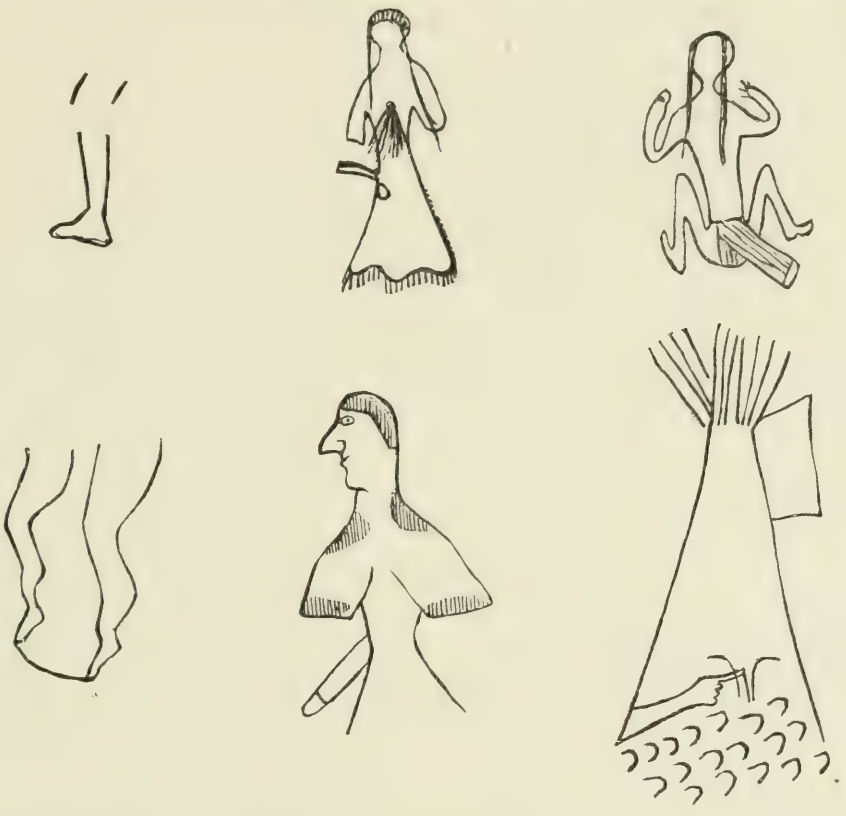
No. II. A white man made medicine over the skull of Crazy-Horse's brother. He holds a pipe-stem in his hand. This probably refers to the custom of gathering the bones of the dead that have been placed on scaffolds and burying them.

White-Cow-Killer calls it "Great-snow winter."

1847–'48. 1848–'49. 1849–'50.

I

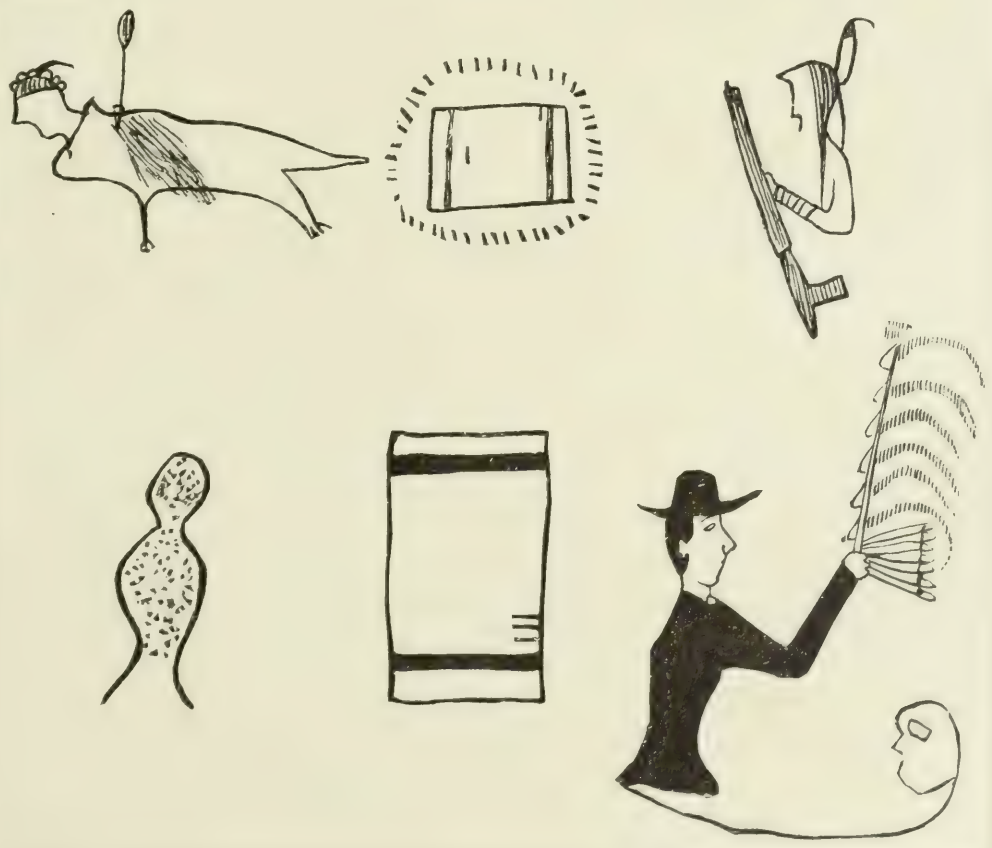
II



1850–'51. 1851–'52. 1852–'53.

I

II

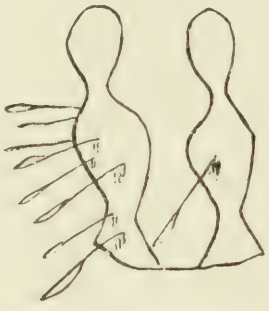


THE CORBUSIER WINTER COUNTS

1853–'54. 1854–'55. 1855–'56.

I

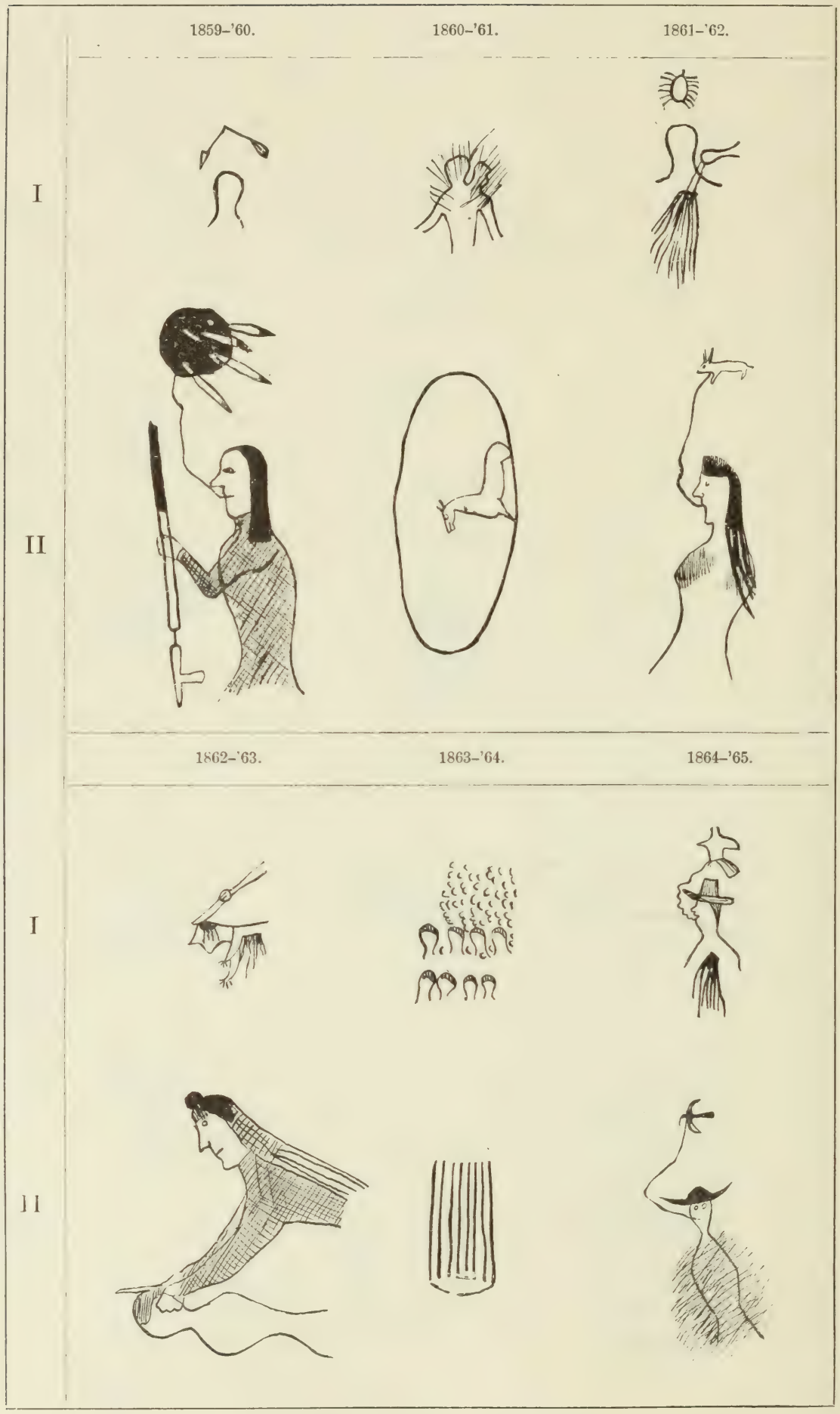
II



1856–'57. 1857–'58. 1858–'59.

I

II



THE CORBUSIER WINTER COUNTS.

1853–'54.—No. I. Antelope-Dung broke his neck while surrounding buffalo.

No. II. Antelope-Dung broke his neck while running antelope. His severed head is the only part of his body that is shown.

White-Cow-Killer calls it "Oak-wood-house winter."

1854–'55.—No. I. Conquering-Bear was killed by white soldiers, and thirty white soldiers were killed by the Dakotas 9 miles below Fort Laramie. The thirty black dots in three lines stand for the soldiers, and the red stains for killed. The head covered with a fatigue-cap further shows they were white soldiers. Indian soldiers are usually represented in a circle or semicircle. The gesture-sign for soldier means all in line, and is made by placing the nearly closed hands with palms forward, and thumbs near together, in front of the body and then separating them laterally about two feet.

No. II. Brave-Bear was killed in a quarrel over a calf. He was killed by enemies; hence his scalp is gone.

White-Cow-Killer says, "Mato-wayuhi (or Conquering-Bear) killed-by-white-soldiers winter."

1855–'56.—No. I. A war party of Oglálas killed one Pawnee—his scalp is on the pole—and on their way home froze their feet.

No. II. Torn-Belly and his wife were killed by some of their own people in a quarrel.

White-Cow-Killer calls it "A-medicine-man-made-buffalo medicine winter."

1856–'57.—No. I. They received annuities at Raw-Hide Butte. The house and the blanket represent the agency and the goods.

No. II. They have an abundance of buffalo meat. This is shown by the full drying pole.

White-Cow-Killer calls it "White-hill-house winter."

1857–'58.—No. I. Little-Gay, a white trader, was killed by the explosion of a can of gunpowder. He was measuring out powder from the can in his wagon while smoking his pipe.

No. II. They surrounded and killed ten Crows.

White-Cow-Killer calls it "Bull-hunting winter."

1858–'59.—No. I. They made peace with the Pawnees. The one on the left is a Pawnee.

No. II. They bought Mexican blankets of John Richard, who bought many wagon-loads of the Mexicans.

White-Cow-Killer calls it "Yellow-blanket-killed winter."

1859–'60.—No. I. Broken-Arrow fell from his horse while running buffalo and broke his neck.

No. II. Black-Shield says prayers and takes the war path to avenge the death of two of his sons who had been killed by the Crows.

White-Cow-Killer calls it "Black-Shield's-two boys-go hunting-and-are-killed-by-the-Crows winter."

1860–'61.—No. I. Two-Face, an Oglála, was badly burnt by the explosion of his powder-horn.

No. II. They capture a great many antelope by driving them into a pen.

White-Cow-Killer calls it "Babies-all-sick-and-many-die winter."

1861–'62.—No. I. Spider was killed (stabbed) in a fight with the Pawnees.

No. II. Young-Rabbit, a Crow, was killed in battle by Red-Cloud.

White-Cow-Killer calls it "Crow-Indian-Spotted-Horse-stole-many-horses-and-was-killed winter."

1862–'63.—No. I. The Crows scalped an Oglála boy alive.

No. II. Some Crows came to their camp and scalped a boy.

White-Cow-Killer calls it "Crows-scalp-boy winter."

1863–'64.—No. I. The Oglálas and Minneconjous took the war path against the Crows and stole three hundred Crow horses. The Crows followed them and killed eight of the party.

No. II. Eight Dakotas were killed by the Crows. Here eight long marks represent the number killed.

White-Cow-Killer calls it "Dakotas-and-Crows-have-a-big-fight-eight-Dakotas-killed winter."

1864–'65.—No. I. Bird, a white trader, went to Powder River to trade with the Cheyennes. They killed him and appropriated his goods.

No. II. Bird, a white trader, was burned to death by the Cheyennes. He is surrounded by flames in the picture.

White-Cow-Killer calls it "Big-Lips-died-suddenly winter."

1865–'66.—No. 1. General Maynadier made peace with the Oglálas and Brulés. His name, the sound of which resembles the words "many deer," is indicated by the two deers' heads connected with his mouth by the lines.

No. II. Many horses were lost by starvation, as the snow was so deep they couldn't get at the grass.

1866–'67.—No. I. They killed one hundred white men at Fort Phil. Kearny. The hats and the cap-covered head represent the whites; the red spots, the killed; the circle of characters around them, rifle or arrow shots; the black strokes, Dakota footmen; and the hoof-prints, Dakota horsemen. The Phil. Kearny massacre occurred December 21, 1866, and eighty-two whites were killed, including officers, citizens, and enlisted men. Capt. W. J. Fetterman was in command of the party.

No. II. Lone-Bear was killed in battle.

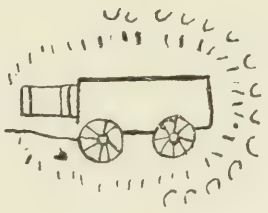
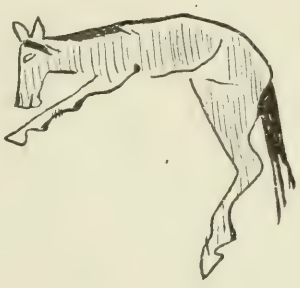
White-Cow-Killer calls it "One-hundred-white-men-killed winter."

1867–'68.—No. I. They captured a train of wagons near Tongue River. The men who were with it got away. The blanket represents the goods found in the wagons.

No. II. Blankets were issued to them at Fort Laramie.

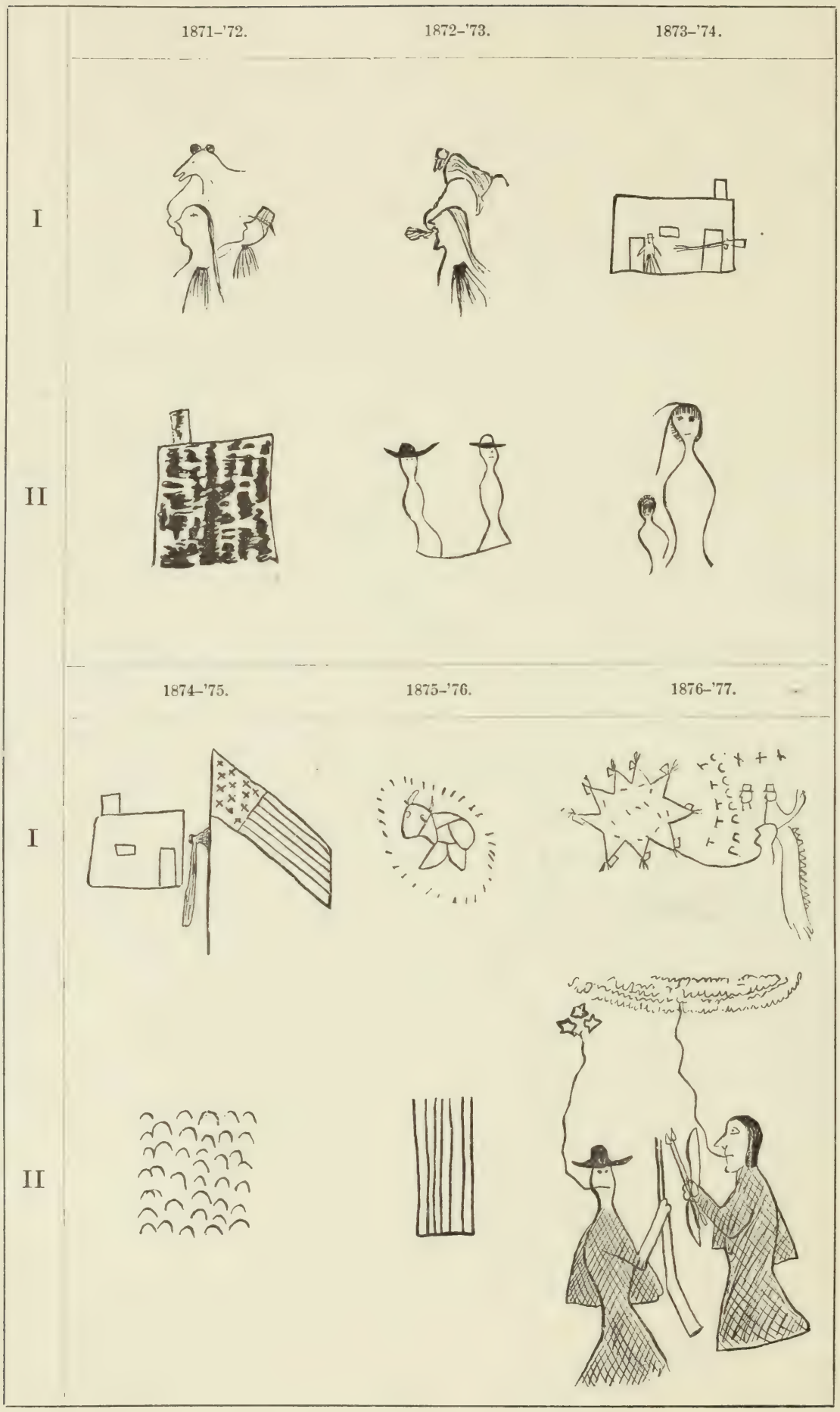
White-Cow-Killer calls it "Seven-Pawnees-killed winter."

1868–'69.—No. I. They were compelled to sell many mules and horses

	1865–'66.	1866–'67.	1867–'68.
I			
II			

	1868–'69.	1869–'70.	1870–'71.
I			
II			

THE CORBUSIER WINTER COUNTS.



THE CORBUSIER WINTER COUNTS.

to enable them to procure food, as they were in a starving condition. They willingly gave a mule for a sack of flour. The mule's halter is attached to two sacks of flour.

No. II. They had to sell many mules and horses to get food, as they were starving.

White-Cow-Killer calls it "Mules-sold-by-hungry-Sioux winter."

1869–'70.—No. I. Tall-Bull was killed by white soldiers and Pawnees on the south side of the South Platte River.

No. II. John Richard shot a white soldier at Fort Fetterman, Wyoming, and fled north, joining Red-Cloud.

White-Cow-Killer calls it "Tree-fell-on-woman-who-was-cutting-wood-and-killed-her winter."

1870–'71.—No. I. High-Back-Bone, a very brave Oglála, was killed by the Shoshoni. They also shot another man, who died after he reached home.

No. II. High-Back-Bone was killed in a fight with the Snakes (Shoshoni).

White-Cow-Killer calls it "High-Back-Bone-killed-by-Snake-Indians winter."

1871–'72.—No. I. John Richard shot and killed an Oglála named Yellow-Bear, and the Oglálas killed Richard before he could get out of the lodge. This occurred in the spring of 1872. As the white man was killed after the Indian, he is placed behind him in the figure.

No. II. Adobe houses were built by Maj. J. W. Wham, Indian agent (now paymaster, United States Army), on the Platte River, about 30 miles below Fort Laramie.

White-Cow-Killer calls it "Major-Wham's-house-built-on-Platte-River winter."

1872–'73.—No. I. Whistler, also named Little-Bull, and two other Oglálas, were killed by white hunters on the Republican River.

No. II. Antoine Janis's two boys were killed by Joe (John?) Richard.

White Cow-Killer calls it "Stay-at-plenty-ash-wood winter."

1873–'74.—No. I. The Oglálas killed the Indian agent's (Seville's) clerk inside the stockade of the Red Cloud Agency, at Fort Robinson, Nebraska.

No. II. They killed many Pawnees on the Republican River.

1874–'75.—No. I. The Oglálas at the Red Cloud Agency, near Fort Robinson, Nebraska, cut to pieces the flag staff which their agent had had cut and hauled, but which they would not allow him to erect, as they did not wish to have a flag flying over their agency. This was in 1874. The flag which the agent intended to hoist is now at the Pine Ridge Agency, Dakota.

No. II. The Utes stole all of the Brulé horses.

1875–'76.—No. I. The first stock cattle were issued to them. The figure represents a cow or spotted buffalo, surrounded by people. The gesture-sign also signifies spotted buffalo.

No. II. Seven of Red-Cloud's band were killed by the Crows.

White-Cow-Killer calls it "Five-Dakotas-killed winter."

1876–'77.—No. I. The Oglálas helped General Mackenzie to whip the Cheyennes. The Indian's head represents the man who was the first to enter the Cheyenne village. The white man holding up three fingers is General Mackenzie, who is placed upon the head of the Dakota to indicate that the Dakotas backed or assisted him. The other white man is General Crook, or Three Stars, as indicated by the three stars above him.

[This designation might be suggested from the uniform, but General Crook did not probably wear during the year mentioned or for a long time before it the uniform either of his rank as major-general of volunteers or as brevet major-general in the Army, and by either of those ranks he was entitled to but two stars on his shoulder-straps.]

No. II. Three-Stars (General Crook) took Red-Cloud's young men to help him fight the Cheyennes. A red cloud, indicating the chief's name, is represented above his head.

White-Cow-Killer calls it "General-Mackenzie-took-the-Red-Cloud-Indians'-horses-away-from-them winter."

1877–'78.—No. I. A soldier ran a bayonet into Crazy-Horse, and killed him in the guard-house, at Fort Robinson, Nebraska (September 5, 1877).

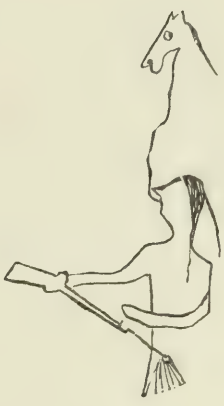
No. II. Crazy-Horse's band left the Spotted Tail Agency (at Camp Sheridan, Nebraska), and went north, after Crazy-Horse was killed at Fort Robinson, Nebraska. Hoof-prints and lodge pole tracks run northward from the house, which represents the Agency. That the horse is crazy is shown by the waved or spiral lines on his body, running from his nose, foot, and forehead.

White-Cow-Killer calls it "Crazy-Horse-killed winter."

1878–'79.—No. I. Wagons were given to them.

No. II. The Cheyenne who boasted that he was bullet and arrow proof was killed by white soldiers, near Fort Robinson, Nebraska, in the intrenchments behind which the Cheyennes were defending themselves after they had escaped from the fort.

White-Cow-Killer calls it "Wagons-given-to-the-Dakota-Indians winter."

	1877–'78.	1878–'79.
I		
II		

THE CORBUSIER WINTER COUNTS.

NOTIFICATION.

This is an important division of the purposes for which pictographs are used. The pictographs and the objective devices antecedent to pictographs under this head that have come immediately to the writer's attention, may be grouped as follows: 1st. Notice of departure, direction, etc. 2d. Notice of condition, suffering, etc. 3d. Warning and guidance. 4th. Charts of geographic features. 5th. Claim or demand. 6th. Messages or communications. 7th. Record of expedition.

NOTICE OF DEPARTURE AND DIRECTION.

Dr. W. J. Hoffman obtained the original of the accompanying drawing, Fig. 47, from Naumoff an Alaskan native, in San Francisco, California, in 1882, also the interpretation, with text in the Kiatexamut dialect of the Innuit language.

FIG. 47.—Alaskan notice of hunt.

The drawing was in imitation of similar ones made by the natives, to inform their visitors or friends of their departure for a certain purpose. They are depicted upon strips of wood which are placed in conspicuous places near the doors of the habitations.

Dr. Hoffman has published a brief account of this drawing as well as the succeeding one, in the Trans. Anthrop. Soc. Washington, II, 1883, p. 134, Fig. 3, and p. 132, Fig 2.

The spelling adopted in the Innuit text, following in each case the explanation of characters, is in accordance with the system now used by the Bureau of Ethnology.

The following is the explanation of the characters:

1. The speaker, with the right hand indicating himself, and with the left pointing in the direction to be taken.

2. Holding a boat paddle—going by boat.

3. The right hand to the side of the head, to denote *sleep*, and the left elevated with one finger elevated to signify *one*—one night.

4. A circle with two marks in the middle, signifying an island with huts upon it.

5. Same as No. 1.

6. A circle to denote another island.

7. Same as No. 3, with an additional finger elevated, signifying *two*—two nights.

8. The speaker with his harpoon, making the sign of a sea lion with the left hand. The flat hand is held edgewise with the thumb elevated, then pushed outward from the body in a slightly downward curve.

9. A sea lion.

10. Shooting with bow and arrow.

11. The boat with two persons in it, the paddles projecting downward.

12. The winter, or permanent habitation of the speaker.

The following is the text in the Aigaluxamut dialect, with an interlinear translation:

Hui ta-wá-ut ai-wí-xa-na kui-gí-qta-mŭn a-xi-lú-mŭk ka-wá-xa-lú-a,
I there (to that place) go (with boat) that island one sleep there,

tca-lí hui ai-wí-lu-a a-xá-mŭn kui-gí-qta-mŭn, ta-wá-ni ma-lú-qnŭk
then I go another that island, (indicated) there two

ka-wá-xa-lú-a, hui pĭ-qlú-a a-xĭ-lú-mŭk' wi-ná-mŭk tca-lí a-ni-xlú-a
sleeps, (nights) I catch one sea lion then return

lú-nan m'nun.
(to) place mine.

The following is of a similar nature, and was obtained under circumstances similar to the preceding.

FIG. 48.—Alaskan notice of departure.

The explanation of the above characters is as follows:

1, 3, 5, 7, represent the person spoken to.

2. Indicates the speaker with his right hand to the side or breast, indicating *self*, the left hand pointing in the direction in which he is going.

4. Both hands elevated, with fingers and thumbs signifies many, according to the informant. When the hands are thus held up, in sign-language, it signifies *ten*, but when they are brought toward and backward from one another, *many*.

6. The right hand is placed to the head to denote sleep—*many sleeps*, or, in other words, *many nights and days;* the left hand points downward, *at that place.*

8. The right hand is directed toward the starting point, while the left is brought upward toward the head—*to go home*, or *whence he came.*

The following is the text in the same dialect last mentioned, with translation:

Hui a-qtcí-kua a-xlá mŭn nu-ná-mŭn, am-lić-ka-mŭ′-ik ha-wá-xa-lu-a,
I go (to) another place, many sleeps
(settlement) (nights)

ta-wá-nĭ, tca-lĭ′ hui a-ni-qlú-a.
there, then I return.

The drawing presented in Figure 49 was made by a native Alaskan, and represents information to the effect that the artist contemplates making a journey to hunt deer. The drawing is made upon a narrow strip of wood, and placed somewhere about the door of the house, where visitors will readily perceive it.

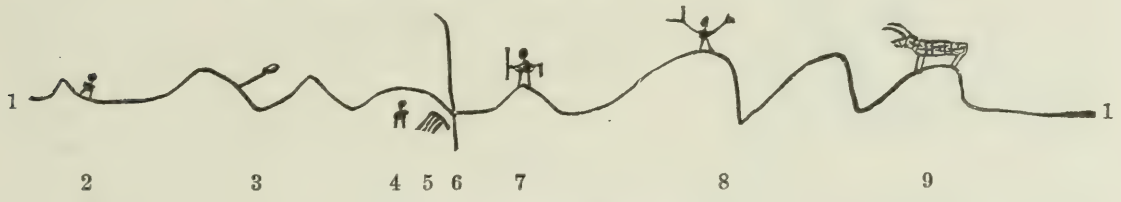


FIG. 49.—Alaskan notice of hunt.

1. Represents the contour lines of the country and mountain peaks.
2. Native going away from home.
3. Stick placed on hill-top, with bunch of grass attached, pointing in the direction he has taken.
4. Native of another settlement, with whom the traveler remained over night.
5. Lodge.
6. Line representing the end of the first day, *i. e.*, the time between two days; rest.
7. Traveler again on the way.
8. Making signal that on second day (right hand raised with two extended fingers) he saw game (deer, 9) on a hill-top, which he secured, so terminating his journey.
9. Deer.

Figures 50, 51, and 52 were drawn by Naumoff, under the circumstances above mentioned, and signify "Have gone home."

FIG. 50.—Alaskan notice of direction.

His explanation of Figure 50 is as follows:

When one of a hunting party is about to return home and wishes to inform his companions that he has set out on such return, he ascends the hill-top nearest to which they became separated, where he ties a bunch of grass or other light colored material to the top of a long stick or pole. The lower end of the stick is placed firmly in the ground, leaning in the direction taken. When another hill is ascended, another stick with

similar attachment is erected, again leaning in the direction to be taken. These sticks are placed at proper intervals until the village is sighted. This device is employed by Southern Alaskan Indians.

He also explained Figure 51 as follows:

FIG. 51.—Alaskan notice of direction.

Seal hunters adopt the following method of informing their comrades that they have returned to the settlement. The first to return to the regular landing place sometimes sticks a piece of wood into the ground, leaning toward the village, upon which is drawn or scratched the out-line of a baidarka, or skin canoe, heading toward one or more outlines of lodges, signifying that the occupants of the boat have gone toward their homes. This is resorted to when the voyage has been a dangerous one, and is intended to inform their companions of the safe arrival of some of the party.

This device is used by coast natives of Southern Alaska and Kadiak.

He also explained Figure 52 as follows:

FIG. 52.—Alaskan notice of direction.

When hunters become separated, the one first returning to the forks of the trail puts a piece of wood in the ground, on the top of which he makes an incision, into which a short piece of wood is secured horizontally, so as to point in the direction taken by the individual.

The following instance is taken from the Narrative of an Expedition to the Source of St. Peter's River, * * under the command of Stephen H. Long, major U. S. Top. Eng. [commonly known as Keating's Long's Expedition]. Philadelphia, 1824. Vol. I, p. 217.

When we stopped, says Major Long, to dine, White Thunder, (the Winnebago chief that accompanied me,) suspecting that the rest of his party were in the neighborhood, requested a piece of paper, pen and ink, to communicate to them the intelligence of his having come up with me. He then seated himself and drew three rude figures, which at my request he explained to me. The first represented my boat with a mast and flag, with three benches of oars and a helmsman; to show that we were Americans, our heads were represented by a rude cross, indicating that we wore hats.

The representation of himself was a rude figure of a bear over a kind of cypher representing a hunting ground. The second figure was designed to show that his wife was with him; the device was a boat with a squaw seated in it; over her head lines were drawn in a zigzag direction, indicating that she was the wife of White Thunder. The third was a boat with a bear sitting at the helm, showing that an Indian of that name had been seen on his way up the river, and had given intelligence where the party were. This paper he set up at the mouth of Kickapoo Creek, up which the party had gone on a hunting trip.

The following is extracted from an Account of an Expedition from Pittsburgh to the Rocky Mountains, * * under the command of Major Stephen H. Long [commonly known as James' Long's Expedition]. Philadelphia, 1823. Vol. I, p. 478.

At a little distance [on the bank of the Platte River], in front of the entrance of this breastwork, was a semicircular row of sixteen bison skulls, with their noses pointing down the river. Near the center of the circle which this row would describe, if continued, was another skull marked with a number of red lines.

Our interpreter informed us that this arrangement of skulls and other marks here discovered, were designed to communicate the following information, namely, that the camp had been occupied by a war party of the Skeeree or Pawnee Loup Indians, who had lately come from an excursion against the Cumancias, Ietans, or some of the western tribes. The number of red lines traced on the painted skull indicated the number of the party to have been thirty-six; the position in which the skulls were placed, that they were on their return to their own country. Two small rods stuck in the ground, with a few hairs tied in two parcels to the end of each, signified that four scalps had been taken.

When a hunting party of the Hidatsa has arrived at any temporary camping ground, from which point a portion of the members might leave on a short reconnoitering expedition, the remainder, upon leaving for a time, will erect a pole and cause it to lean in the direction taken. At the foot of this pole a buffalo shoulder-blade or other flat bone is placed, upon which is depicted the object causing departure. For instance, should buffalo or antelope be discovered, an animal of the character sighted is rudely drawn with a piece of charred wood or red lead, the latter being a substance in the possession of nearly every warrior to use in facial decoration, etc.

When a Hidatsa party has gone on the war path, and a certain number is detailed to take another direction, the point of separation is taken as the rendezvous. After the return of the first party to the rendezvous, should the second not come up in a reasonable length of time, they will set sticks in the ground leaning in the direction to be taken, and notches are cut into the upper ends of the sticks to represent the number of nights spent there by the waiting party.

A party of Hidatsa who may be away from home for any purpose whatever often appoint a rendezvous, from which point they return to their respective lodges. Should an individual return to the rendezvous before any others and wish to make a special trip for game or plunder, he will, for the information of the others, place a stick of about 3 or 4 feet in length in the ground, upon the upper end of which a notch is cut, or perhaps split, for the reception of a thinner piece of twig or branch having a length of about a foot. This horizontal top piece is inserted at one end, so that the whole may point in the direction to be taken. Should the person wish to say that the trail would turn at a right angle, to either side, at about one-half the distance of the whole journey in prospect, the horizontal branch is either bent in that direction or a naturally-curved branch is selected having the turn at the middle of its entire length, thus corresponding to the turn in the trail. Any direction can be indicated by curves in the top branch.

NOTICE OF CONDITION.

According to Masta, chief of the Abnaki, members of that tribe remove the bark of trees in prominent places to denote that the inhabitants of the nearest lodge are in a starving condition.

The Ottawa and the Potawatomi Indians indicate hunger and starvation by drawing a black line across the breast or stomach of the figure of a man. (See Fig. 145, page 221.) This drawing is placed upon a piece of wood, either incised or with a mixture of powdered charcoal and glue water, or red ocher. This is then attached to a tree or fastened to a piece of wood, and erected near the lodge on a trail, where it will be observed by passers by, who are expected to alleviate the sufferings of the native who erected the notice.

Figure 53 illustrates information with regard to distress in another village, which occasioned the departure of the party giving the notification. The drawing was made for Dr. W. J. Hoffman, in 1882, by Naumoff, in imitation of drawings prepared by Alaska natives. The designs are traced upon a strip of wood, which is then stuck upon the roof of the house belonging to the recorder.

Fig. 53.—Alaskan notice of distress.

1. The summer habitation, showing a stick leaning in the direction to be taken.

2. The baidarka, containing the residents of the house. The first person is observed pointing forward, indicating that they "go by boat to the other settlement."

3. A grave stick, indicating a death in the settlement.

4, 5. Summer and winter habitations, denoting a village.

The drawing, Figure 54, made for Dr. Hoffman in 1882, by a native, in imitation of originals in Alaska, is intended to be placed in a conspicuous portion of a settlement which has been attacked by a hostile force and finally deserted. The last one to leave prepares the drawing upon a strip of wood to inform friends of the resort of the survivors.

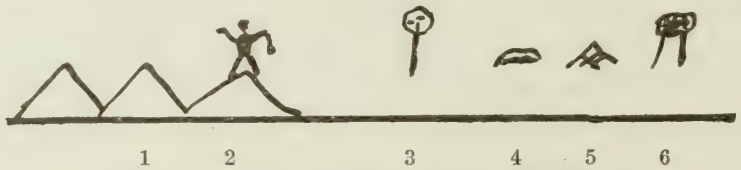


Fig. 54.—Alaskan notice of departure and refuge.

1. Represents three hills or ranges, signifying that the course taken would carry them beyond that number of hills or mountains.

2. The recorder, indicating the direction, with the left hand pointing to the ground, *one* hill, and the right hand indicating the number *two*, the number still to be crossed.

3. A circular piece of wood or leather, with the representation of a face, placed upon a pole and facing the direction to be taken from the settlement. In this instance the drawing of the character denotes a hostile attack upon the town, for which misfortune such devices are sometimes erected.

4, 5. Winter and summer habitations.

6. Store house, erected upon upright poles.

This device is used by Alaska coast natives generally.

In connection with these figures reference may be made to a paper by the present writer in the First Annual Report of the Bureau of Ethnology, p. 369, showing the devices of the Abnaki.

Dr. George Gibbs (Contributions to N. A. Ethnology, Vol. I, p. 222) says of "symbolic writing" of the northwest tribes:

> I am not aware how far this may be carried among the Sound tribes. Probably there is no great essential difference between them and their neighbors of the plains in this art. It may perhaps be best explained by an example given me by a veteran mountaineer, Dr. Robert Newell, of Champoeg. A party of Snakes are going to hunt strayed horses. A figure of a man, with a long queue, or scalp lock, reaching to his heels, denoted Shoshonee; that tribe being in the habit of braiding horse- or other hair into their own in that manner. A number of marks follow, signifying the strength of the party. A foot-print, pointed in the direction they take, shows their course, and a hoof-mark turned backward, that they expect to return with animals. If well armed, and expecting a possible attack, a little powder mixed with sand tells that they are ready, or a square dotted about the figures indicates that they have fortified.

The design shown in Figure 55 is in imitation of etchings made by natives of Southern Alaska to convey to the observer the information that the recorder had gone away to another settlement the inhabitants of which were in distress. The drawings were put on a strip of wood and placed at the door of the house where it might be seen by visitors or inquirers.

FIG. 55.—Notice of departure to relieve distress. Alaska.

Naumoff gave the following explanation:

1. A native making the gesture of indicating *self* with the right hand, and with the left indicating direction and *going*.

2. The native's habitation.

3. Scaffold used for drying fish. Upon the top of the pole is placed a piece of wood tied so that the longest end points in the direction to be taken by the recorder.

4. The baidarka conveying the recorder.

5. A native of the settlement to be visited.

6. Summer habitation.

7. "Shaman stick" or grave stick, erected to the memory of a recently deceased person, the cause of which has necessitated the journey of the recorder.

8. Winter habitation. This, together with No. 6, indicates a settlement.

Fig. 56, also drawn by Naumoff, means "ammunition wanted."

FIG. 56.—Ammunition wanted. Alaska.

When a hunter is tracking game, and exhausts his ammunition, he returns to the nearest and most conspicuous part of the trail and sticks his ihú^{n}ŭk in the ground, the top leaning in the direction taken. The ihú^{n}ŭk is the pair of sticks arranged like the letter A, used as a gun-rest. This method of transmitting the request to the first passer is resorted to by the greater number of coast natives of Southern Alaska.

Fig. 57, also drawn by Naumoff, means "discovery of bear; assistance wanted."

FIG. 57.—Assistance wanted in hunt. Alaska.

When a hunter discovers a bear, and requires assistance, he ties together a bunch of grass, or other fibrous matter, in the form of an animal with legs, and places it upon a long stick or pole which is erected at a conspicuous point to attract attention. The head of the effigy is directed toward the locality where the animal was last seen.

This device is also used at times by most of the Southern Alaskan Indians.

Figure 58 was also drawn by Naumoff, and signifies "starving hunters."

1 2 3 4

FIG. 58.—Starving hunters. Alaska.

Hunters who have been unfortunate, and are suffering from hunger, scratch or draw upon a piece of wood characters similar to those figured, and place the lower end of the stick in the ground on the trail where the greatest chance of its discovery occurs. The stick is inclined toward the locality of the habitation. The accompanying explanation will serve to illustrate more fully the information contained in the drawing.

1. A horizontal line denoting a canoe, showing the persons to be fishermen.

2. An individual with both arms extended signifying *nothing*, corresponding with the gesture for negation.

3. A person with the right hand to the mouth, signifying *to eat*, the left hand pointing to the house occupied by the hunters.

4. The habitation.

The whole signifies that there is *nothing to eat* in the *house*. This is used by natives of Southern Alaska.

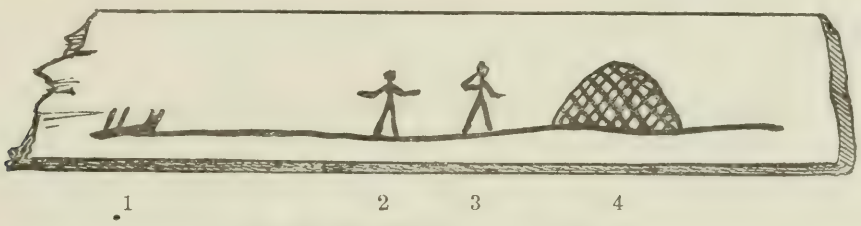


FIG. 59.—Starving hunters. Alaska.

Figure 59, with the same signification, and from the same hand, is similar to the preceding in general design. This is placed in the ground near the landing place of the canoemen, so that the top points toward the lodge.

The following is the explanation of the characters:

1. Baidarka, showing double projections at bow, as well as the two individuals, owners, in the boat.

2. A man making the gesture for *nothing*. (See in this connection Figure 155, page 235.)

3. Gesture drawn, denoting *to eat*, with the right hand, while the left points to the lodge.

4. A winter habitation.

This is used by the Alaskan coast natives.

WARNING AND GUIDANCE.

An amusing instance of the notice or warning of "No thoroughfare" is given on page 383 of the present writer's paper, Sign Language among North American Indians, in the First Annual Report of the Bureau of, Ethnology. It was taken from a rock-etching in Cañon de Chelly, New Mexico. A graphic warning against trespass appears in Schoolcraft, Vol. I, Plate 48, Figure B, op. page 338.

During his connection with the geographic surveys west of the one hundredth meridian under the direction of Capt. G. M. Wheeler, U. S. Army, Dr. Hoffman observed a practice which prevailed among the Tivátikai Shoshoni, of Nevada, in which heaps of stones were erected along or near trails to indicate the direction to be taken and followed to reach springs of water.

Upon slight elevations of ground, or at points where a trail branched into two or more directions, or at the intersection of two trails, a heap of stones would be placed, varying from 1 to 2 or more feet in height, according to the necessity of the case, to attract attention. Upon the top of this would be fixed an elongated piece of rock so placed that the most conspicuous point projected and pointed in the course to be

followed. This was continued sometimes at intervals of several miles unless indistinct portions of a trail or intersections demanded a repetition at shorter distances.

A knowledge of the prevalence of this custom proved very beneficial to the early prospectors and pioneers.

Stone circles and stone heaps of irregular form were also met with, which to a casual observer might be misleading. These resulted from previous deposits of edible pine nuts, which had been heaped upon the ground and covered over with stones, grass, and earth to prevent their destruction by birds and rodents. These deposits were placed along the trails in the timbered regions to afford sustenance to Indians who had failed in the hunt, or who might not reach camp in time to prevent suffering from hunger.

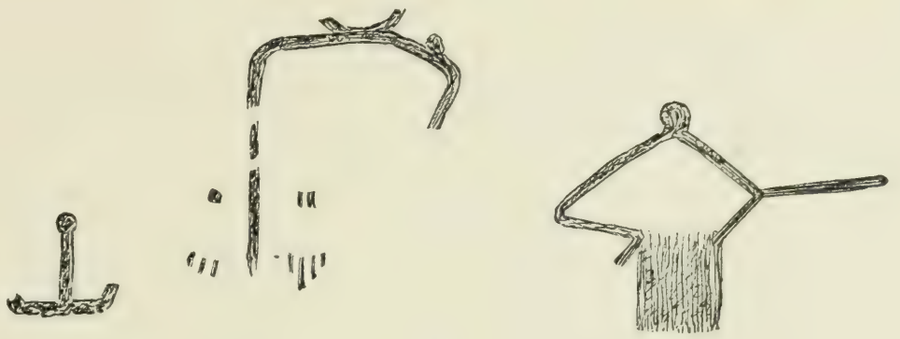
Plate LXXX (A, B, C) represents colored pictographs found by Dr. Hoffman in 1884 on the North Fork of the San Gabriel River, also known as the Azuza Cañon, Los Angeles County, California. Its description is as follows:

A and B are copies, one-sixteenth natural size, of rock painting found in the Azuza Cañon, 30 miles northeast of Los Angeles, California.

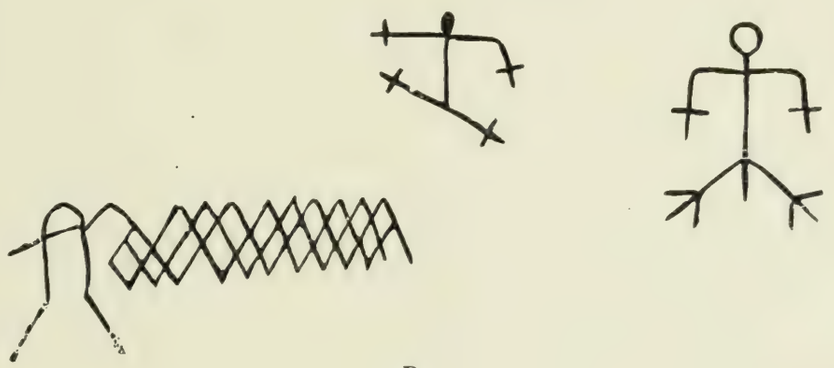
The bowlder upon which the paintings occur measures 8 feet long, about 4 feet high, and the same in width. The figures occur on the eastern side of the rock, so that the left arm of the human figure on the right points toward the north.

The map (C) at the bottom of the plate presents the topography of the immediate vicinity and the relative positions of the rocks bearing the two illustrations. The map is drawn on a scale of 1,000 yards to the inch.

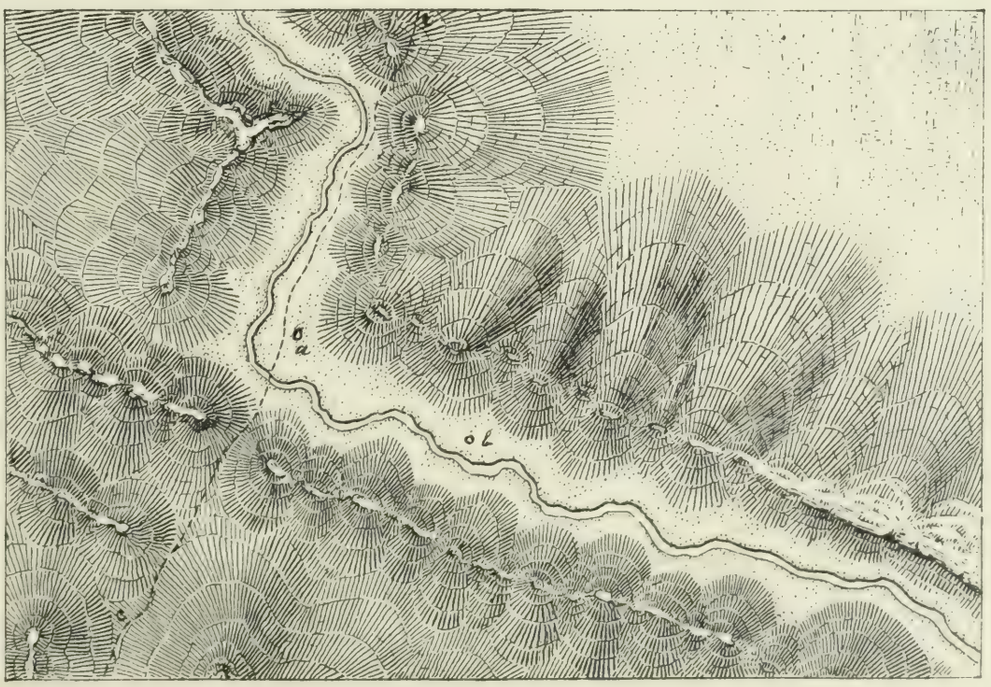
The stream is the North Fork of the San Gabriel River, and is hemmed in by precipitous mountains, with the exception of two points marked *c*, *c*, over which the old Indian trail passed in going from the Mojave Desert on the north to the San Gabriel Valley below, this course being the nearest for reaching the mission settlements at San Gabriel and Los Angeles. In attempting to follow the water-course the distance would be greatly increased and a rougher trail encountered. The pictograph A, painted on the rock marked *b* on the map C, shows characters in pale yellow, upon a bowlder of almost white granite, which are partly obliterated by weathering and annual floods, though still enough remains to indicate that the right-hand figure is directing the observer to the northeast, although upon taking that course it would be necessary to round the point a short distance to the west. It may have been placed as a notification of direction to those Indians who might have come up the cañon instead of on the regular trail. Farther west, at the spot marked *a* on the map, is a granite bowlder bearing a large number of paintings part of which have become almost obliterated. These were drawn with red ocher (ferric



A.



B.



C.

ROCK PAINTINGS IN AZUZA CAÑON, CALIFORNIA.

oxide). A selection of these is shown in B on the plate. This is on the western face of the rock, almost vertical. This also appears to refer to the course of the trail, which might readily be lost on account of the numerous mountain ridges and spurs. The left-hand figure appears to place the left hand upon a series of ridges, as if showing pantomimically the rough and ridged country over the mountains.

The middle figure represents gesture, which in its present connection may indicate direction of the trail, *i. e.*, toward the left, or northward in an up-hill course, as indicated by the arm and leg, and southward, or downward, as suggested by the lower inclination of the leg, and lower forearm and hand on the right of the illustration.

The right-hand figure, although similar in manner of delineating gesture and general resemblance to the Shoshonian method, is not yet determined in that connection.

These illustrations, as well as other pictographs on the same rock, not at present submitted, bear remarkable resemblance to the general type of Shoshonian drawing, and from such evidence as is now attainable it appears more than probable that they are of Chemehuevi origin, as that tribe at one time ranged thus far west, though north of the mountains, and also visited the valley and settlements at Los Angeles at stated intervals to trade. It is also known that the Mojaves came at stated periods to Los Angeles as late as 1845, and the trail indicated at point *a* of the map would appear to have been their most practicable and convenient route. There is strong evidence that the Mokis sometimes visited the Pacific coast and might readily have taken this same course, marking the important portion of the route by drawings in the nature of guide boards.

CHARTS OF GEOGRAPHIC FEATURES.

Dr. W. J. Hoffman states that when at Grapevine Springs, Nevada, in 1871, the Pai Uta living at that locality informed the party of the exact location of Las Vegas, the objective point. The Indian sat upon the sand, and with the palms of his hands formed an oblong ridge to represent Spring Mountain, and southeast of this ridge another gradual slope, terminating on the eastern side more abruptly; over the latter he passed his fingers to represent the side valleys running eastward. He then took a stick and showed the direction of the old Spanish trail running east and west over the lower portion of the last-named ridge.

When this was completed the Indian looked at the members of the party, and with a mixture of English, Spanish, Pai-Uta, and gesture signs, told them that from where they were now they would have to go southward, east of Spring Mountain, to the camp of Pai-Uta Charlie, where they would have to sleep; then indicating a line southeastward to

another spring (Stump's) to complete the second day; then he followed the line representing the Spanish trail to the east of the divide of the second ridge above named, where he left it, and passing northward to the first valley, he thrust the short stick into the ground and said, "Las Vegas."

It is needless to say that the information was found to be correct and of considerable value to the party.

Schoolcraft (Vol. I, p. 334, Pl. 47, Fig. B) mentions that the discovery, on one of the tributaries of the Susquehanna River, "of an Indian map drawn on stone, with intermixed devices, a copy of which appears in the first volume of the collections of the Historical Committee of the American Philosophical Society, Philadelphia, proves, although it is thus far isolated, that stone was also employed in that branch of inscription. This discovery was in the area occupied by the Lenapees, who are known to have practiced the art, which they called Ola Walum."

The Tegua Pueblos, of New Mexico, "traced upon the ground a sketch of their country, with the names and locations of the pueblos occupied in New Mexico," a copy of which, "somewhat improved," is given in Vol. III, Pacific R. R. Explorations, 1856, Part III, pp. 9, 10.

A Yuma map of the Colorado River, with the names and locations of tribes within its valley, is also figured in the last mentioned volume, page 19. The map was originally traced upon the ground.

A Pai-Uta map of the Colorado River is also figured in the same connection, which was obtained by Lieutenant Whipple and party.

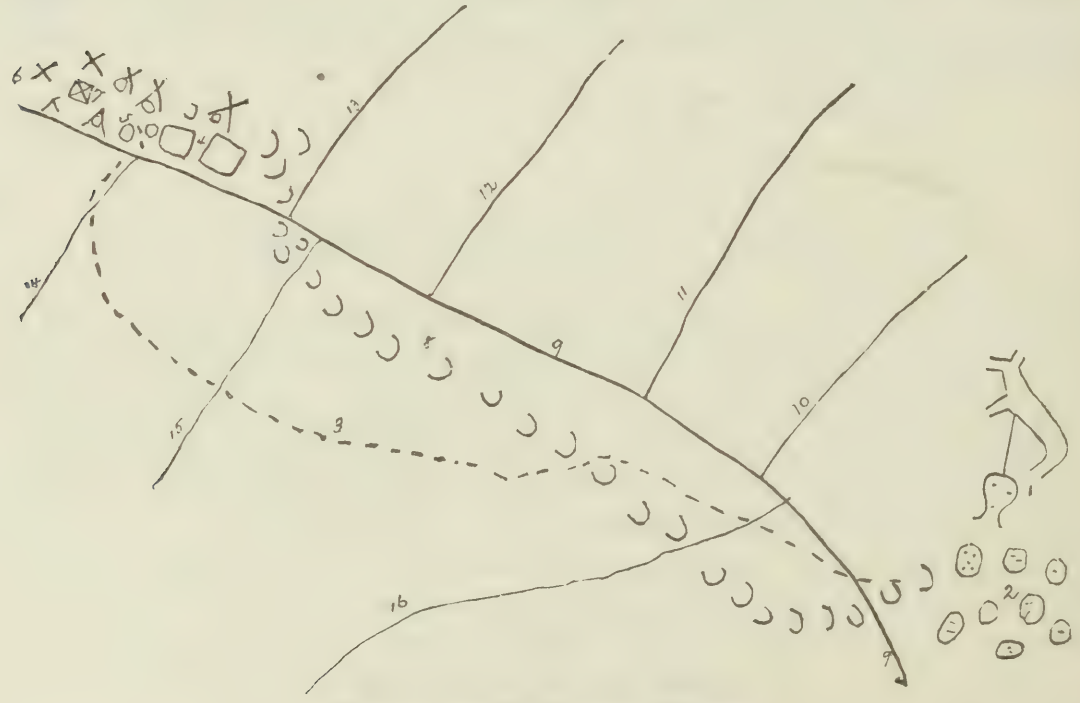


FIG. 60.—Lean-Wolf's map. Hidatsa.

Lean-Wolf, of the Hidatsa, who drew the picture of which Figure 60 is a fac-simile, made a trip on foot from Fort Berthold to Fort Buford, Dakota, to steal a horse from the Dakotas encamped there. The

returning horse tracks show that he attained the object in view, and that he rode home. The following explanation of characters was made to Dr. Hoffman, at Fort Berthold, in 1881:

1. Lean-Wolf, the head only of a man to which is attached the outline of a wolf.
2. Hidatsa earth lodges, circular in form, the spots representing the pillars supporting the roof. Indian village at Fort Berthold, Dakota.
3. Human footprints; the course taken by the recorder.
4. The Government buildings at Fort Buford (square).
5. Several Hidatsa lodges (round), the occupants of which had intermarried with the Dakotas.
6. Dakota lodges.
7. A small square—a white man's house—with a cross marked upon it, to represent a Dakota lodge. This denotes that the owner, a white man, had married a Dakota woman who dwelt there.
8. Horse tracks returning to Fort Berthold.
9. The Missouri River.
10. Tule Creek.
11. Little Knife River.
12. White Earth River.
13. Muddy Creek.
14. Yellowstone River.
15. Little Missouri River.
16. Dancing Beard Creek.

CLAIM OR DEMAND.

Stephen Powers states that the Nishinam of California have a curious way of collecting debts. "When an Indian owes another, it is held to be in bad taste, if not positively insulting, for the creditor to dun the debtor, as the brutal Saxon does; so he devises a more subtle method. He prepares a certain number of little sticks, according to the amount of the debt, and paints a ring around the end of each. These he carries and tosses into the delinquent's wigwam without a word and goes his way; whereupon the other generally takes the hint, pays the debt, and destroys the sticks." See Contrib. to N. A. Ethnology, Vol. III, 321.

Dr. W. J. Hoffman says, "When a patient has neglected to remunerate the Shaman [Wĭktcŏm'nĭ of the Yokŏtsan linguistic division] for his services, the latter prepares short sticks of wood, with bands of colored porcupine quills wrapped around them, at one end only, and every time he passes the delinquent's lodge a certain number of them are thrown in as a reminder of the indebtedness." See San Francisco (Cal.) Western Lancet, XI, 1882, p. 443.

MESSAGES AND COMMUNICATIONS.

Figure 61 is a letter sent by mail from a Southern Cheyenne, named Turtle-following-his-Wife, at the Cheyenne and Arapaho Agency, Indian Territory, to his son, Little-Man, at the Pine Ridge Agency, Dakota Territory. It was drawn on a half-sheet of ordinary writing paper, without a word written. It was inclosed in an envelope, which was addressed to "Little-Man, Cheyenne, Pine Ridge Agency," in the ordinary manner, written by some one at the first-named agency. The letter was evidently understood by Little-Man, as he immediately called upon Dr. V. T. McGillycuddy, Indian agent at Pine Ridge Agency, and was

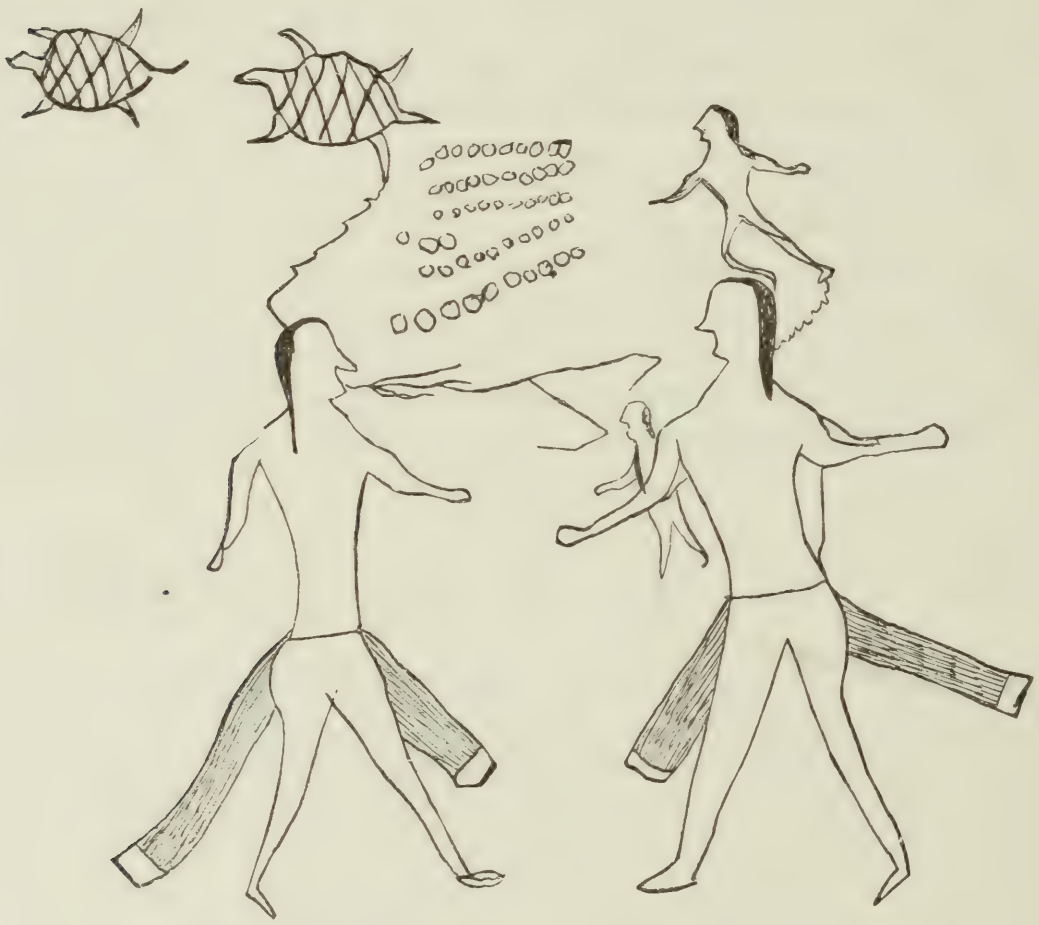


FIG. 61.—Letter to Little-Man from his father Cheyenne.

aware that the sum of $53 had been placed to his credit for the purpose of enabling him to pay his expenses in going the long journey to his father's home in Indian Territory. Dr. McGillycuddy had, by the same mail, received a letter from Agent Dyer, inclosing $53, and explaining the reason for its being sent, which enabled him also to understand the pictographic letter. With the above explanation it very clearly shows, over the head of the figure to the left, the turtle following the turtle's wife united with the head of the figure by a line, and over the head of the other figure, also united by a line to it, is a little man. Also over

the right arm of the last-mentioned figure is another little man in the act of springing or advancing toward Turtle-following-his-Wife, from whose mouth proceed two lines, curved or hooked at the end, as if drawing the little figure towards him. It is suggested that the last-mentioned part of the pictograph is the substance of the communication, *i. e.*, "come to me," the larger figures with their name totems being the persons addressed and addressing. Between and above the two large figures are fifty-three round objects intended for dollars. Both the Indian figures have on breech-cloths, corresponding with the information given concerning them, which is that they are Cheyennes who are not all civilized or educated.

The illustration, Figure 62, was made by a native Alaskan, and represents a native of the Teninahs making a smoke signal to the people of the village on the opposite shore of a lake, so that a boat may be sent to carry the signalist across. The K'niqamūt band of the Tenina have no boats, as they live inland, and therefore resort to signaling with smoke when desiring transportation. On account of this custom they are termed "Signal People." If the pictograph could be transmitted in advance of the necessity, the actual use of the smoke signal, with consequent delay in obtaining the boat, would be avoided.

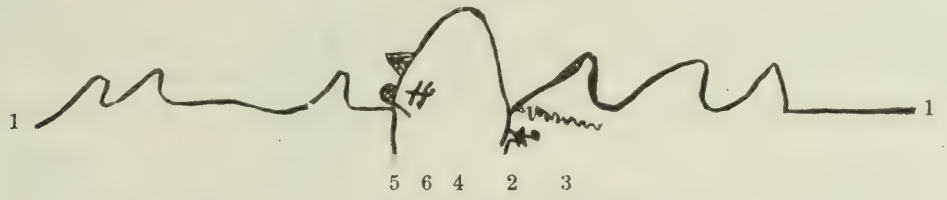


FIG. 62.—Drawing of smoke signal. Alaska.

1. Represents the mountain contour of the country.
2. A Tenina Indian.
3. Column of smoke.
4. Bird's-eye view of the lake.
5. The settlement on opposite shore of lake.
6. Boat crossing for the signalist.

Under this head of messages and communications may be included the material objects sent as messages, many accounts of which are published. It is to be expected that graphic representations of the same or similar objects, with corresponding arrangement, should have similar significance. Among the Indians painted arrows, bearing messages when discharged, are familiar. The Turkish Selam, or flower letters, are in the same category.

The following account of a "diplomatic packet" is extracted from Schoolcraft, Vol. III, p. 306, *et seq.*:

In the month of August, 1852, a message reached the President of the United States, by a delegation of the Pueblos of Tesuque in New Mexico, offering him friendship and intercommunication; and opening, symbolically, a road from the Moqui country to Washington. * * *

This unique diplomatic packet consists of several articles of symbolic import. The first is the official and ceremonial offer of the peace-pipe. This is symbolized by a joint of the maize, five and a half inches long, and half an inch in diameter. The hollow of the tube is filled by leaves of a plant which represents tobacco. It is stopped to secure the weed from falling out, by the downy yellow under plumage of some small bird. Externally, around the center of the stalk, is a tie of white cotton twisted string of four strands, (not twisted by the distaff,) holding, at its end, a small tuft of the before-mentioned downy yellow feathers, and a small wiry feather of the same species. The interpreter has written on this, "The pipe to be smoked by the President." * * The object is represented in the cut, A, [represented in Figure 63.]

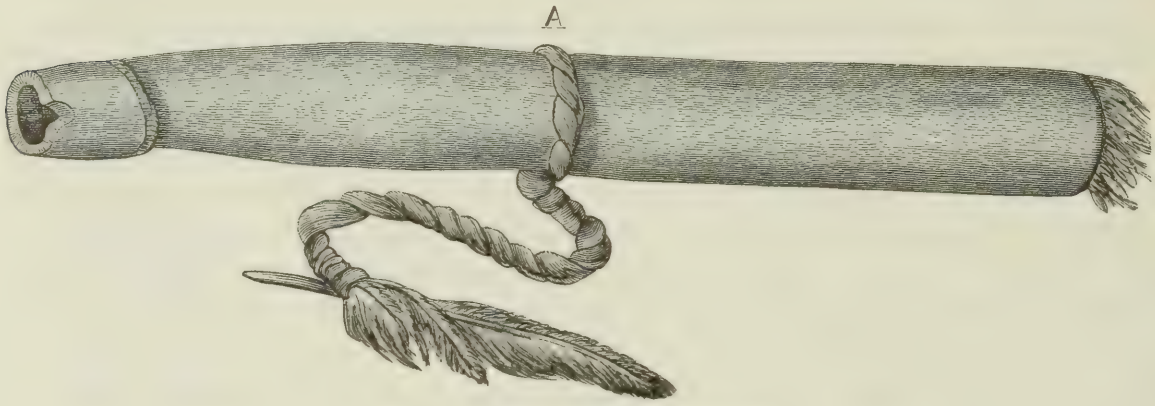


FIG. 63.—Part of diplomatic packet.

The second symbol consists of two small columnar round pieces of wood, four and a half inches long, and four-tenths in diameter, terminating in a cone. The cone is one and a half inches long, and is colored black; the rest of the pieces are blue; a peace color among the Indians south, it seems, as well as north. This color has the

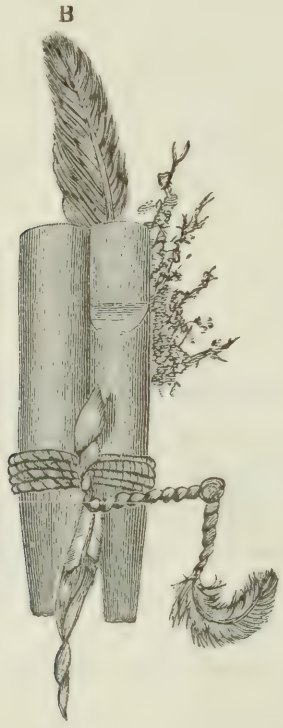


FIG. 64.—Part of diplomatic packet.

FIG. 65.—Part of diplomatic packet.

appearance of being produced by the carbonate of copper mixed with aluminous earth; and reminds one strongly of the blue clays of the Dacotahs. The wood, when cut, is white, compact, and of a peculiar species. A notch is cut at one end of one of

the pieces, and colored yellow. A shuck of the maize, one end of which, rolled in the shape of a cone, is bound up by cotton strings, with a small bird's feather, in the manner of the symbolic pipe. There is also tied up with the symbolic sticks, one of the secondary feathers and bits of down of a bird of dingy color. The feather is naturally tipped with white. Together with this, the tie holds a couple of sticks of a native plant or small seed of the prairie grass, perhaps. It may, together with the husk of the maize, be emblematic of their cultivation. The whole of the tie represents the Moquis. The following cut, B, [reproduced in Figure 64,] represents this symbol:

The third object is, in every respect, like B, [reproduced in Figure 64,] and symbolizes the President of the United States. A colored cotton cord, four feet long, unites these symbols. Six inches of this cord is small and white. At the point of its being tied to the long colored cord there is a bunch of small bird's feathers. This bunch, which symbolizes the geographical position of the Navajoes, with respect to Washington, consists of the feathers of six species, the colors which are pure white, blue, brown, mottled, yellow, and dark, like the pigeon-hawk, and white, tipped with brown. (See the preceding cut, C.)

The interpreter appends to these material effigies or devices [which are arranged as in D, reproduced in Figure 66] the following remarks.

"These two figures represent the Moqui people and the President; the cord is the road which separates them; the feather tied to the cord is the meeting point; that

D

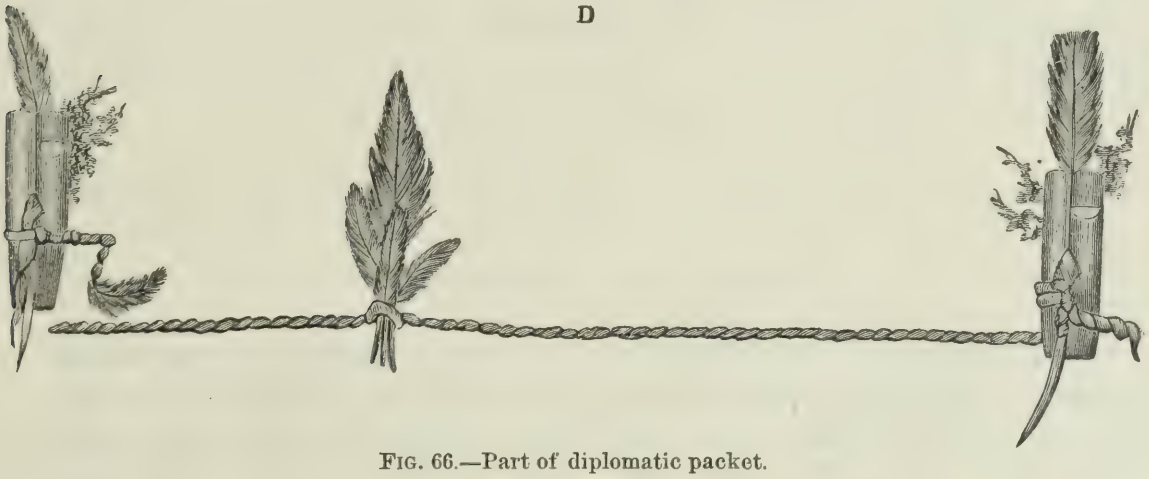


FIG. 66.—Part of diplomatic packet.

part of the cord which is white is intended to signify the distance between the President and the place of meeting; and that part which is stained is the distance between the Moqui and the same point. Your Excellency will perceive that the distance between the Moqui and place of meeting is short, while the other is very long.

E

FIG. 67.—Part of diplomatic packet.

"The last object of this communication from the high plains of New Mexico, is the most curious, and themost strongly indicative of the wild, superstitious notions of the

Moqui mind. It consists of a small quantity of wild honey, wrapped up in a wrapper or inner fold of the husk of the maize, as represented in E, [reproduced in Figure 67.] It is accompanied by these remarks:

"A charm to call down rain from heaven.—To produce the effect desired, the President must take a piece of the shuck which contains the wild honey, chew it, and spit it upon the ground which needs rain; and the Moquis assure him that it will come."

The Maori used a kind of hieroglyphical or symbolical way of communication; a chief inviting another to join in a war party sent a tattooed potato and a fig of tobacco bound up together, which was interpreted to mean that the enemy was a Maori and not European by the tattoo, and by the tobacco that it represented smoke; he therefore roasted the one and eat it, and smoked the other, to show he accepted the invitation, and would join him with his guns and powder. Another sent a water-proof coat with the sleeves made of patchwork, red, blue, yellow, and green, intimating that they must wait until all the tribes were united before their force would be water-proof, *i. e.*, able to encounter the European. Another chief sent a large pipe, which would hold a pound of tobacco, which was lighted in a large assembly, the emissary taking the first whiff, and then passing it round; whoever smoked it showed that he joined in the war. See Te Ika a Maui, by Rev. Richard Taylor, London, 1870.

RECORD OF EXPEDITION.

Under this head, many illustrations of which might be given besides several in this paper, see account of colored pictographs in Santa Barbara County, California, page 34 *et seq.*, Plates I and II, also Lean-Wolf's trip, Figure 60, page 158. Also, Figures 135 and 136, pages 214 and 215.

TOTEMIC.

This is one of the most striking of the special uses to which pictography has been applied by the North American Indians. For convenience, the characters may be divided into: First, tribal; Second, gentile; and Third, personal designations.

TRIBAL DESIGNATIONS.

A large number of these graphic distinctions are to be found in the Dakota Winter Counts.

Rev. J. Owen Dorsey reports that the Tsiou side of the Osage tribe, when on a war party, have the face painted red, with mud upon the cheek, below the left eye, as wide as two or more fingers.

The Hañka side of the tribe paint the face red, with a spot of mud upon the right cheek, below the eye, as wide as two or more fingers.

For an ingenious method of indicating by variation of incisions on trees, the tribal use of paint by the Absaroka and Dakota respectively, see page 62.

Figure 68 shows the tribal designation of the Kaiowa by the Dakota, taken from the winter count of Battiste Good, 1814–'15. He calls the winter "Smashed-a-Kaiowa's-head-in winter." The tomahawk with which it was done is in contact with the Kaiowa's head.

The sign for Kaiowa is made by passing the hands—naturally extended—in short horizontal circles on either side of the head, and the picture is probably drawn to represent the man in the attitude of making this gesture, and not the involuntary raising of the hands upon receiving the blow, such attitudes not appearing in Battiste Good's system.

FIG. 68.—Kaiowa.

Figure 69 is the tribal sign of the Arikara made by the Dakotas, taken from the winter count of Battiste Good for the year 1823–'24, which he calls "General ———first-appeared-and-the-Dakotas-aided-in-an-attack-on-the-Rees winter"; also "Much-corn winter."

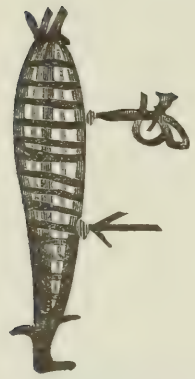


FIG. 69.—Arikara.

The gun and the arrow in contact with the ear of corn show that both whites and Indians fought the Rees.

The ear of corn signifies "Ree" or Arikara Indians, who are designated in gesture language as "Corn Shellers."

Figure 70 is the tribal designation of the Omahas by the Dakotas, taken from the winter count of Battiste Good.

A human head with cropped hair and red cheeks signifies Omaha This tribe cuts the hair short and uses red paint upon the cheeks very extensively. This character is of frequent occurrence in Battiste Good's count.

FIG. 70. Omaha.

Figure 71 is the tribal designation of the Pani by the Dakotas, taken from Battiste Good's winter count for the year 1704–'05.

He says: The lower legs are ornamented with slight projections resembling the marks on the bottom of an ear of corn [husks], and signifies Pani.

FIG. 71.—Pani.

A pictograph for Cheyenne is given in Figure 78, page 173, with some remarks.

Figure 72 is the tribal designation for Assiniboine by the Dakotas from winter count of Battiste Good for the year 1709–'10.

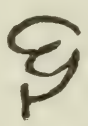


FIG. 72.—Assiniboine.

The Dakota pictorial sign for Assiniboine or Hohe, which means the voice, or, as some say, the voice of the musk-ox, is the outline of the vocal organs, as they conceive them, and represents the upper lip and roof of the mouth, the tongue, the lower lip, and chin and neck. The view is lateral, and resembles the sectional aspect of the mouth and tongue.

Figure 73 is the tribal designation of the Gros Ventres, by the same tribe and on the same authority.

Two Gros Ventres were killed on the ice by the Dakotas in 1789–'90. The two are designated by two spots of blood on the ice, and *killed* is expressed by the blood-tipped arrow against the figure of the man above. The long hair, with the red forehead, denotes the Gros Ventre. The red forehead illustrates the manner of applying war paint, and applies, also, to the Arikara and Absaroka Indians, in other Dakota records. The horizontal blue band signifies ice.

FIG. 73.——Gros Ventre.

Stephen Powers says (Contrib. to N. A. Ethnology, III, p. 109) the

Mattoal, of California, differ from other tribes in that the men tattoo. "Their distinctive mark is a round blue spot in the center of the forehead."

He adds: Among the Mattoal—

> The women tattoo pretty much all over their faces.
>
> In respect to this matter of tattooing there is a theory entertained by some old pioneers which may be worth the mention. They hold that the reason why the women alone tattoo in all other tribes is that in case they are taken captives their own people may be able to recognize them when there comes an opportunity of ransom. There are two facts which give some color of probability to this reasoning. One is that the California Indians are rent into such infinitesimal divisions, any one of which may be arrayed in deadly feud against another at any moment, that the slight differences in their dialects would not suffice to distinguish the captive squaws. A second is that the squaws almost never attempt any ornamental tattooing, but adhere closely to the plain regulation mark of the tribe.

Paul Marcoy, in Travels in South America, N. Y., 1875, Vol. II, page 353, says of the Passés, Yuris, Barrés, and Chumanas, of Brazil, that they mark their faces (in tattoo) with the totem or emblem of the nation to which they belong. It is possible at a few steps distant to distinguish one nation from another.

GENTILE OR CLAN DESIGNATIONS.

Rev. J. Owen Dorsey reports of the Osages that all the old men who have been distinguished in war are painted with the decorations of their respective gentes. That of the Tsiou wactake is as follows: The face is first whitened all over with white clay; then a red spot is made on the forehead, and the lower part of the face is reddened; then with the fingers the man scrapes off the white clay, forming the dark figures, by letting the natural color of the face show through.

In Schoolcraft, V, 73, 74, it is stated that by totemic marks the various families of the Ojibwa denote their affiliation. A guardian spirit has been selected by the progenitor of a family from some object in the zoological chain. The representative device of this is called the totem. A warrior's totem never wants honors in their reminiscences, and the mark is put on his grave-post, or *adjedatig*, when he is dead. In his funeral pictograph he invariably sinks his personal name in that of his totem or family name. These marks are, in one sense, the surname of the clan. The personal name is not indicative of an Indian's totem.

The same custom, according to Rev. J. Owen Dorsey, prevails among the Omahas; and with the exception of that portion which relates to the drawing of the totemic mark upon the grave post the above remarks apply also to the Dakotas, of Northern Dakota, according to the observations of Dr. Hoffman. The Pueblos, remarked Mr. James Stevenson in a conversation with the writer, depict the gens totems upon their vari-

ous forms and styles of ceramic manufacture. The peculiar forms of secondary decoration also permit the article to be traced to any particular family by which it may have been produced.

PERSONAL DESIGNATIONS.

This head may be divided into (1) Insignia, or tokens of authority. (2) Connected with personal name. (3) Property marks. (4) Status of the individual. (5) Signs of particular achievement.

INSIGNIA OR TOKENS OF AUTHORITY.

A large number of examples are presented in connection with other divisions of this paper. Many more are noted in Schoolcraft, especially in Vol. I, plates 58 and 59, following page 408. In addition the following may be mentioned:

FIG. 74.—Lean-Wolf. Partisan.

Figure 74 is a copy of a drawing made by Lean-Wolf, second chief of the Hidatsa, to represent himself. The horns on his head-dress show that he is a chief. The eagle feathers on his war-bonnet, arranged in the special manner portrayed, also show high distinction as a warrior. His authority as "partisan," or leader of a war party is represented by the elevated pipe. His name is also added with the usual line drawn from the head. He explained the outline character of the wolf, having a white body with the mouth unfinished, to show that it was hollow, nothing there, *i. e.*, lean. The animal's tail is drawn in detail and dark to distinguish it from the body.

The character for "partisan" is also shown in the Dakota winter counts for the year 1842–'43. See Plate XXIII.

Figure 75 (extracted from the First Annual Report Bureau of Ethnology, Fig. 227), drawn and explained by an Oglala Dakota, exhibits four erect pipes to show that he had led four war parties.

FIG. 75.—Two-Strike as Partisan.

PERSONAL NAME.

The names of Indians as formerly adopted or bestowed among themselves were and still remain connotive, when not subjected to white influence. They very often refer to some animal, predicating an attribute or position of that animal. On account of their objective, or at least ideographic, character, they almost invariably admit of being expressed in sign-language; and for the same reason they can with the same ease be portrayed in pictographs. Abundant proof of this is given in two collections *infra*, viz., the Ogalala Roster and the Red-Cloud Census. The device generally adopted by the Dakotas to signify that an object drawn in connection with a human head or figure was a name totem or a personal name of the individual, is to connect that object with the figure by a line drawn to the head or more frequently to the mouth of the latter. The same tribes make a distinction in manifesting that the gesture-sign for the object gestured is intended to be the name of an individual, by passing the index forward from the mouth in a direct line after the conclusion of the sign for the object. This signifies, "that is his name,"—the name of the person referred to.

A similar designation of an object as a name by means of a connected line is mentioned in Kingsborough's Mexico, Vol. I, Plate 33, part 4, and text, Vol. VI, page 150. Pedro de Alvarado, one of the companions of Cortez, was red-headed. Because of this the Mexicans called him *Tonatihu*, the "Sun," and in their picture-writing his name was represented by a picture of that luminary attached to his person by a line.

As a general rule Indians are named at first according to a clan or gentile system, but in later life one generally acquires a new name, or perhaps several names in succession, from some special exploits or adventures. Frequently a sobriquet is given which is not complimentary. All of the names subsequently acquired as well as the original names are so connected with material objects or with substantive actions as to be expressible in a graphic picture, and also in a pictorial sign. The determination to use names of this connotive character is shown by the objective translation, whenever possible, of such European names as it became necessary for them to introduce frequently into their speech. William Penn was called *Onas*, that being the word for feather-quill in the Mohawk dialect. The name of the second French governor of Canada was Montmagny, erroneously translated to be "great mountain," which words were correctly translated by the Iroquois into *Onontio*, and this expression becoming associated with the title has been applied to all successive Canadian governors, though the origin having been generally forgotten, it has been considered to be a metaphorical compliment. Governor Fletcher was named by the Iroquois *Cajenquiragoe*, "the great swift arrow," not because of his speedy arrival at a critical time, as has been supposed, but because they had somehow been informed of the etymology of his name, "arrow-maker" (*Fr. fléchier*). A notable example of the adoption of a graphic illustration from a similarity in the sound of the name to known English words is given in the present paper in the Winter Count of American-Horse for the year 1865–'66, page 144, where General Maynadier is made to figure as "many deer."

While, as before said, some tribes give names to children from considerations of birth and kinship according to a fixed rule, others confer them after solemn deliberation. They are not necessarily permanent. A diminutive form is frequently bestowed by the affection of the parent. On initiation a warrior always assumes or receives a name. Until this is established he is liable to change his name after every fight or hunt. He will generally only acknowledge the name he has himself assumed, perhaps from a dream or vision, though he may be habitually called by an entirely different name. From that reason the same man is sometimes known under several different epithets. Personal peculiarity, deformity, or accident is sure to fix a name, against which it is vain to struggle. Girls do not habitually change names bestowed in their childhood. It may also be remarked that the same precise name is often given to different individuals in the same tribe, but not so frequently in the same band, whereby the inconvenience would be increased. For this reason it is often necessary to specify the band, sometimes also the father. For instance, when the writer asked an Indian who Black-Stone, a chief mentioned in the Dakota winter counts, was, the Indian asked, first, what tribe was he; then, what band; then, who was his father; and, except in the case of very noted persons, the identity is not proved

willing to tell his proper name to a white man as to an Indian; and, of course, between the Indian and the white man there is no relationship the term for which can serve as a proper name. An Indian, therefore, when he has to do with a European, asks the latter to give him a name, and if one is given to him, always afterwards uses this. The names given in this way are generally simple enough—John, Peter, Thomas, and so on. But sometimes they are not sufficiently simple to be comprehended and remembered by their Indian owners, who therefore, having induced the donor to write the name on a piece of paper, preserve this ever after most carefully, and whenever asked for their name by another European, exhibit the document as the only way of answering. Sometimes, however, an Indian, though he cannot pronounce his English names, makes it possible by corruption. For instance, a certain Macusi Indian was known to me for a long time as Shassapoon, which I thought was his proper name, until it accidentally appeared that it was his 'English name,' he having been named by and after one Charles Appun, a German traveler.

The original of Figure 76 was made by Lean-Wolf, second chief of the Hidatsa, for Dr. W. J. Hoffman in 1881, and represents the method which this Indian has employed to designate himself for many years past. During his boyhood he had another name. This is a current, or perhaps it may be called cursive, form of the name, which is given more elaborately in Figure 74.

FIG. 76.—Lean-Wolf.

Figure 77 is taken from the winter count of Battiste Good for the year 1841–'42. He calls the year "Pointer-made-a-commemoration-of-the-dead winter." Also "Deep-snow winter."

The extended index denotes the man's name, "Pointer," the ring and spots, deep snow.

The spots denoting snow occur also in other portions of this count, and the circle, denoting *quantity*, is also attached in Figure 141, p. 219, to a forked stick and incloses a buffalo head to signify *much meat*. That the circle is intended to signify quantity is probable, as the gesture for "much" or "quantity" is made by passing the hands upward from both sides and together before the body, describing the upper half of a circle, *i. e.*, showing a heap.

FIG. 77.—Pointer.

Figure 78 is also from the winter count of Battiste Good for the year 1785–'86. This year he calls "The-Cheyennes-killed-Shadow's-father winter."

The umbrella signifies Shadow; the three marks under the arrow, Cheyenne; the blood-stained arrow in the man's body, killed; Shadow's name and the umbrella in the figure intimates that he was the first Dakota to carry an umbrella. The advantages of the umbrella were soon recognized by the Dakotas, and the first they obtained from the whites were highly prized.

In the record prepared by Battiste Good this is the only instance where the short vertical lines below the arrow signify Cheyenne. In all others these marks are numerical, and denote the number of persons killed. That these short lines signify Cheyenne may be attributable

to a practice of that tribe, to make transverse cuts in the forearm after or before going into a conflict, as an offering or vow to the Great Spirit for success. Cheyennes are thus represented in the winter count of Cloud-Shield for 1834–'35 (see page 139) and 1878–'79 (see page 146.)

FIG. 78.—Shadow.

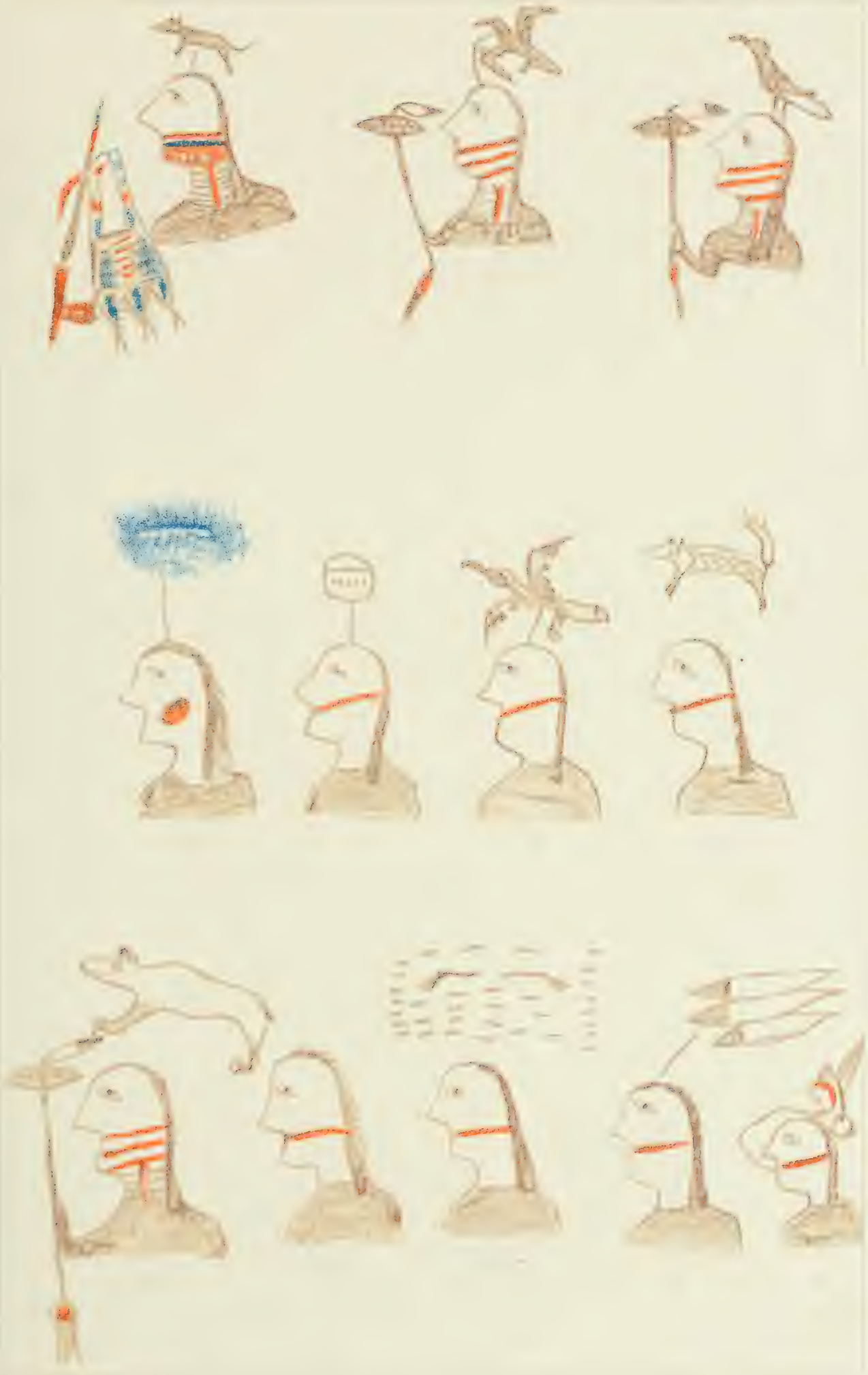
Mr. P. W. Norris has presented a buffalo robe containing a record of exploits, which was drawn by Black-Crow, a Dakota warrior, several years ago. The peculiarity of the drawings is, that the warrior is represented in each instance in an upright position, the accompanying figure being always in a recumbent posture, representing the enemy who was slain. Instead of depicting the personal name above the fallen personage with a line connecting the two, the name of the enemy is placed above the head of the victor in each instance, a line extending between the character and the speaker or warrior whose exploits the characters represent. The latter seems to proclaim the name of his victim. A pipe is also figured between the victor and the vanquished, showing that he is entitled to smoke a pipe of celebration.

A copy of the whole record was shown to the Mdewakantawan Dakotas, near Fort Snelling, Minnesota, in 1883, and the character reproduced in Figure 79, about which there was the most doubt, was explained as signifying "many tongues," *i. e.*, Loud-Talker, being the name of the person killed.

FIG. 79.—Loud-Talker.

The circle at the end of the line running from the mouth contains a number of lanceolate forms, the half of each of which is black, the other white. They have the appearance of feathers. These figures signify voice, the sounds as issuing from the mouth, and correspond in some respect to those drawn by the Mexicans with that significance. The considerable number of these figures, signifying intensity, denotes loud voice, or, as given literally, "loud talker," that being the name of the victim.

It is however to be noted that "Shield," an Oglala Dakota, says the character signifies Feather-Shield, the name of a warrior formerly living at the Pine Ridge Agency, Dakota.



English names of the figures in the Ogalala Roster.

No. 1. Big-road.
2. Bear-looking-behind.
3. Brings-back-plenty.
4. White buffalo.
5. The-real-hawk.
6. Shield-boy.
7. The-bear-stops.
8. Wears-the-feather.
9. Dog-eagle.
10. Red-horn-bull.
11. Low-dog.
12. Charging-hawk.
13. White-tail.
14. Blue-cloud (woman).
15. Shield.
16. Little-eagle.
17. Spotted-skunk.
18. White-bear.
19. White-hair.
20. His-fight.
21. Center-feather.
22. Kills-Crows (Indians).
23. The-bear-spares-him.
24. White-plume.
25. Fears-nothing.
26. Red crow.
27. The-last-bear.
28. Bird-man.
29. Horse-with-horns.
30. Fast-elk.
31. Chief-boy.
32. Spotted-elk.
33. Carries-the-badger.
34. Red-earth-woman.
35. Eagle-clothing.
36. Has-a-war-club.
37. Little-buffalo.
38. Has-a-point (weapon.)
39. Returning-scout.
40. Little-killer.
41. Whistler.
42. Tongue.
43. Black-elk.
44. Lone-woman.
No. 45. Deaf-woman.
46. Long-dog. Erroneously printed Wall dog on Plate LVI.
47. Iron-hawk.
48. Pretty-weasel.
49. Short-buffalo.
50. Bull-with-bad-heart.
51. Four crows.
52. Tall-white-man.
53. Eagle-hawk.
54. Lone-man.
55. Causes-trouble-ahead.
56. Makes-dirt ("foul").
57. Black-road.
58. Shot-close.
59. Iron-crow.
60. Running-horse.
61. Owns-an-animal-with-horns.
62. Blue-cloud-man.
63. Fingers.
64. Sacred-teeth.
65. Searching-cloud.
66. Female-elk-boy.
67. Little-owl.
68. Pretty-horse.
69. Running-eagle.
70. Makes-enemy.
71. Prairie-chicken.
72. Red-flute-woman.
73. Little-hawk.
74. Standing-buffalo.
75. Standing-bear.
76. Iron-white-man.
77. Bear-whirlwind.
78. Sacred-crow.
79. Blue-hawk.
80. Hard-to-kill.
81. Iron-boy.
82. Painted-rock
83. Yellow-wolf.
84. Made-an-enemy.

The information yet obtained from the author of the pictograph concerning its details is meager, and as it will probably be procured no unimportant conjectures are now hazarded. It is presented for the ideography shown, which may in most cases be understood from the translation of the several names into English as given in the preceding list. A few remarks of explanation, occurring to the writer, may be added:

No. 34, on plate LIV, with the translation Red-earth-woman, appears from the scalp-lock and the warrior's necklace to be a man, and Red-earth-woman to be his name.

No. 62 on Plate LVII, probably refers to an Ogalala who was called Arapaho, the interpretation, as well as the blue cloud, being in the Dakota language "Blue cloud," a term by which the Arapaho Indians are known to the Dakotas, as several times mentioned in this paper. In No. 65, Plate LVII, the cloud is drawn in blue, the *searching* being derived from the expression of that idea in gesture by passing the extended index of one hand (or both) forward from the eye, then from right to left, as if indicating various uncertain localities before the person, *i. e.*, searching for something. The lines from the eyes are in imitation of this gesture.

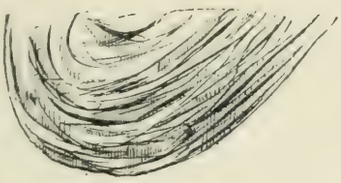
In No. 77, Plate LVIII, is a reproduction of the character given in Red-Cloud's Census, No. 133. See Plate LXVII. The figure appears, according to the explanation given by several Ogalala Dakota Indians, to signify the course of a whirlwind, with the transverse lines in imitation of the circular movement of the air, dirt, leaves, etc., observed during such aërial disturbances.

In No. 78 of the same plate the lines above the bird's head again appear to signify *sacred*, *mystic*, usually termed "medicine" in other records. Similar lines are in No. 64, Plate LVII.

RED-CLOUD'S CENSUS.

The pictorial census, shown in Plates LIX to LXXIX, was prepared under the direction of Red-Cloud, chief of the Dakota at Pine Ridge Agency, Dakota Territory, about two years ago. The individuals referred to and enumerated are the adherents of Red-Cloud, and do not represent all the Indians at that Agency. Owing to some disagreement the agent refused to acknowledge that chief as head of the Indians at the agency, and named another as the official chief. The Indians under Red-Cloud exhibited their allegiance to him by attaching, or having their names attached, to seven sheets of ordinary manilla paper, which were sent to Washington and, while in the custody of Dr. T. A. Bland, of that city, were kindly loaned by him to the Bureau of Ethnology to be copied by photography. The different sheets were apparently drawn by different persons, as the drawings of human heads vary enough to indicate individuality.

The first sheet of the original series contains in the present series of plates Nos. 1-130; the second sheet, Nos. 131–174; third sheet, Nos. 175–



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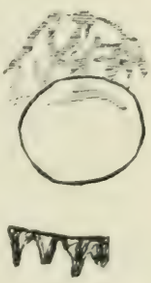

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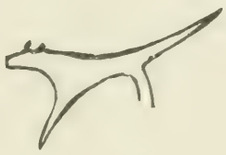

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RED-CLOUD'S CENSUS — RED-CLOUD'S BAND.

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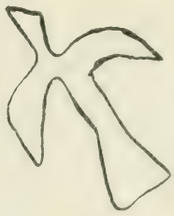

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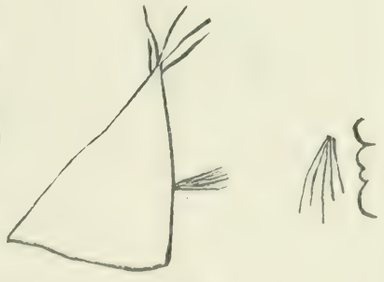

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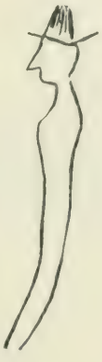

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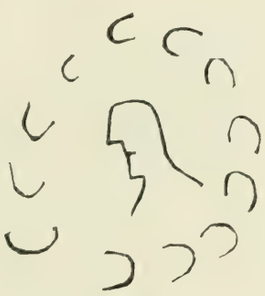

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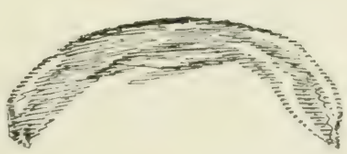

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RED-CLOUD'S CENSUS.—RED-CLOUD'S BAND.

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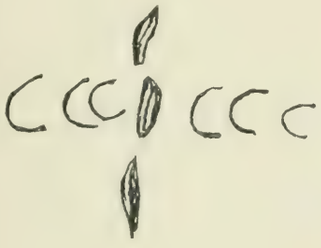

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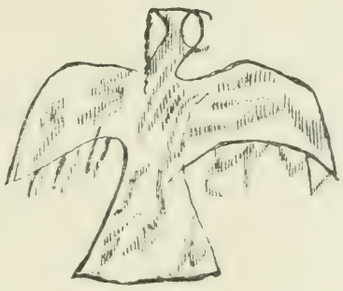

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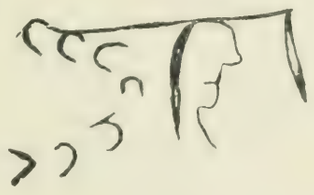

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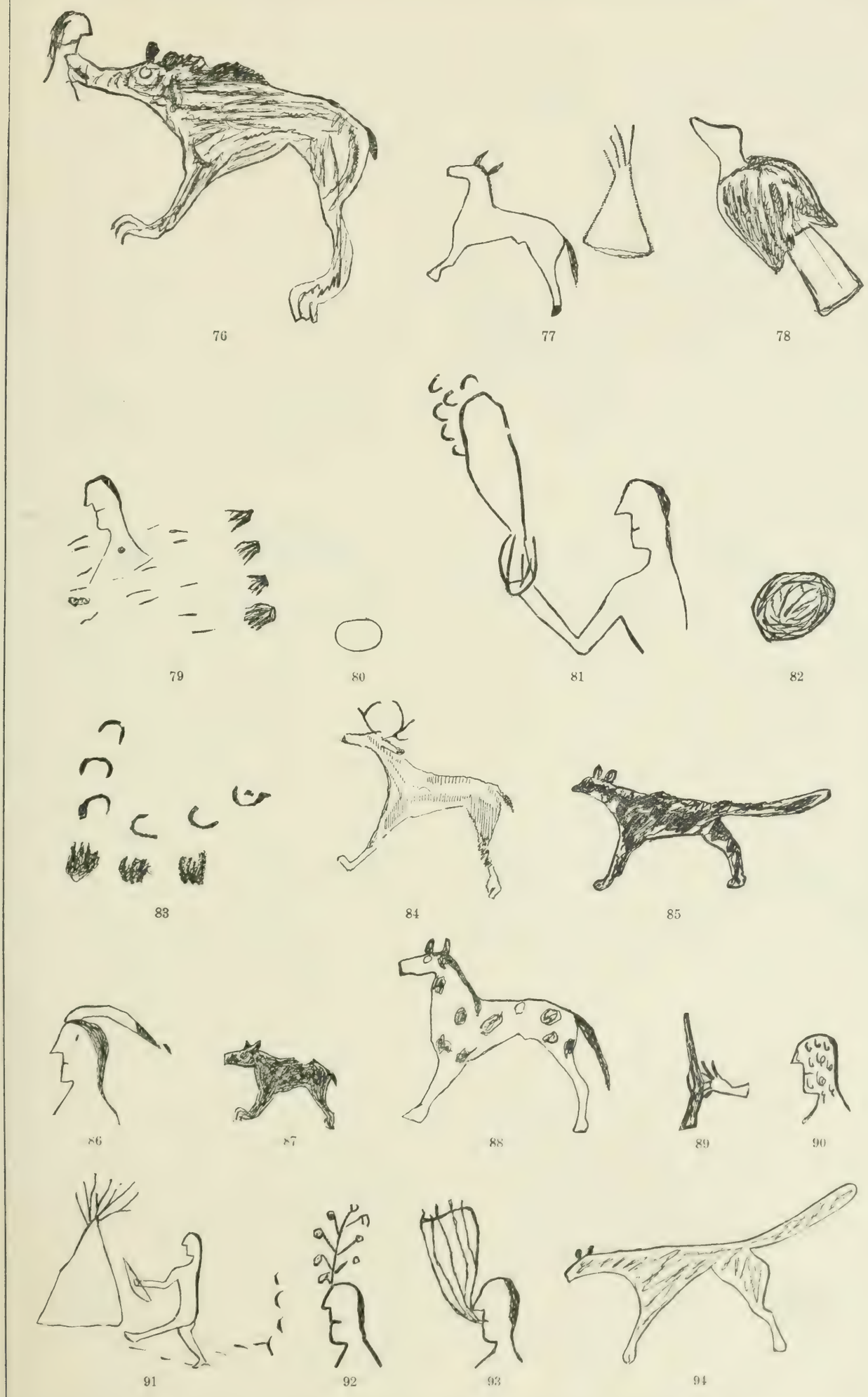

RED-CLOUD'S CENSUS.—RED-CLOUD'S BAND

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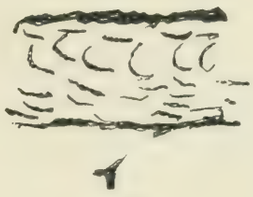

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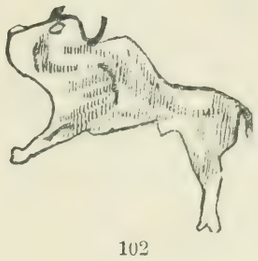

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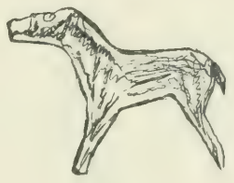

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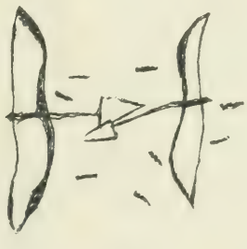

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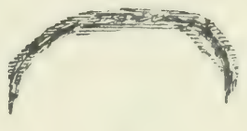

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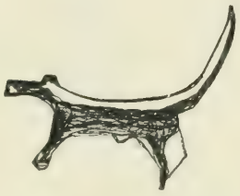

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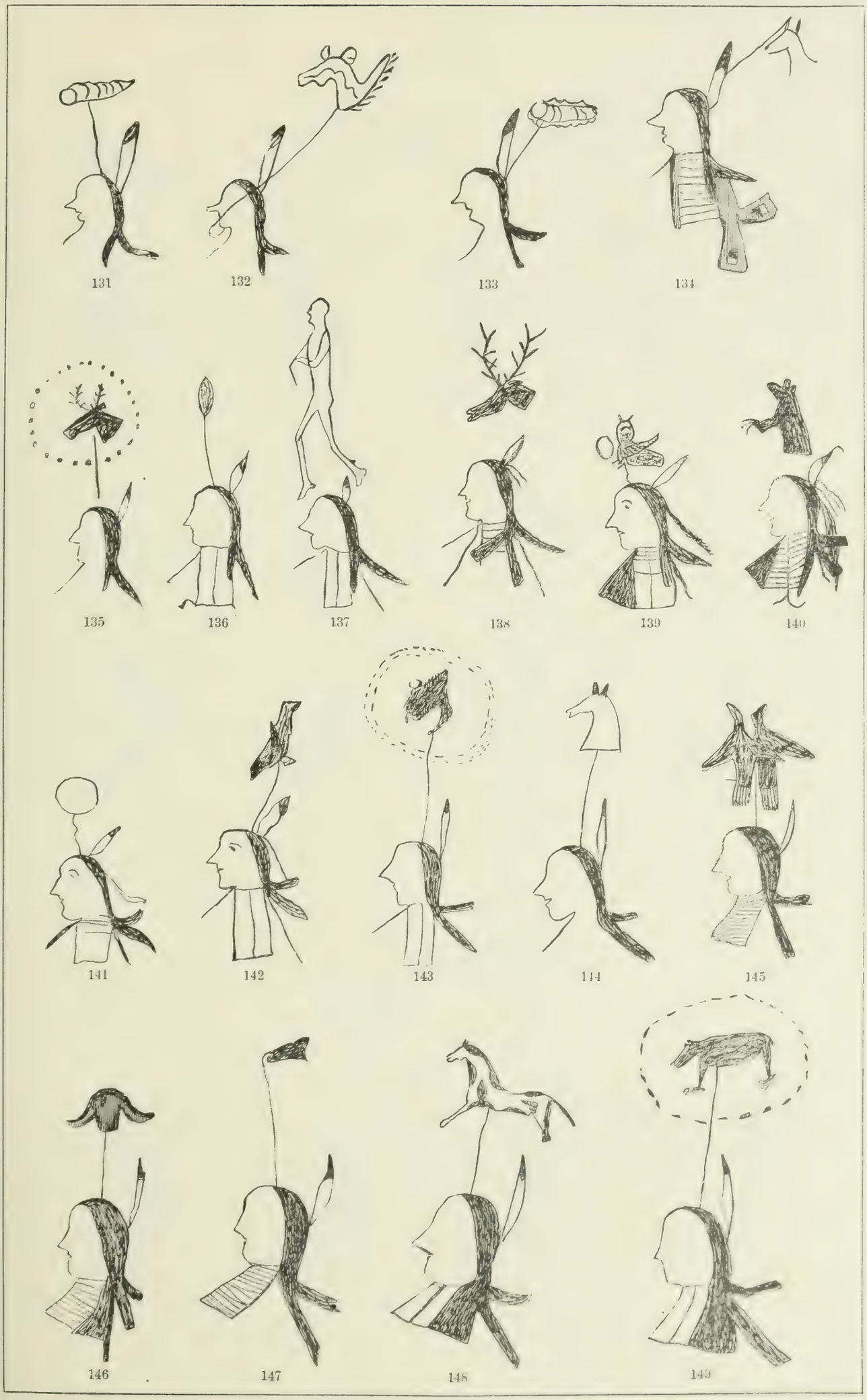

RED-CLOUD'S CENSUS — KIT-CA-PTIS BAND.

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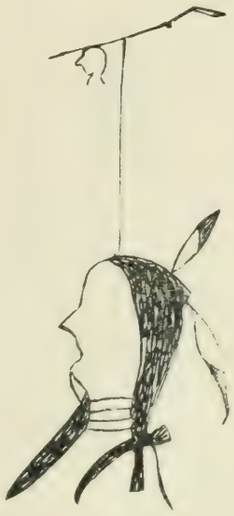
RED-CLOUD'S CENSUS.—RED-SHIRT'S BAND.



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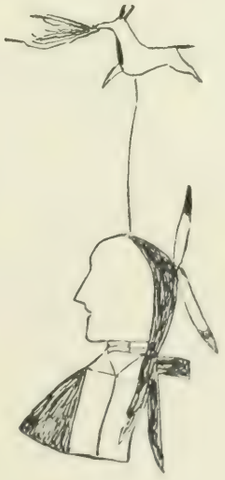

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RED-CLOUD'S CENSUS.—RED-SHIRT'S BAND

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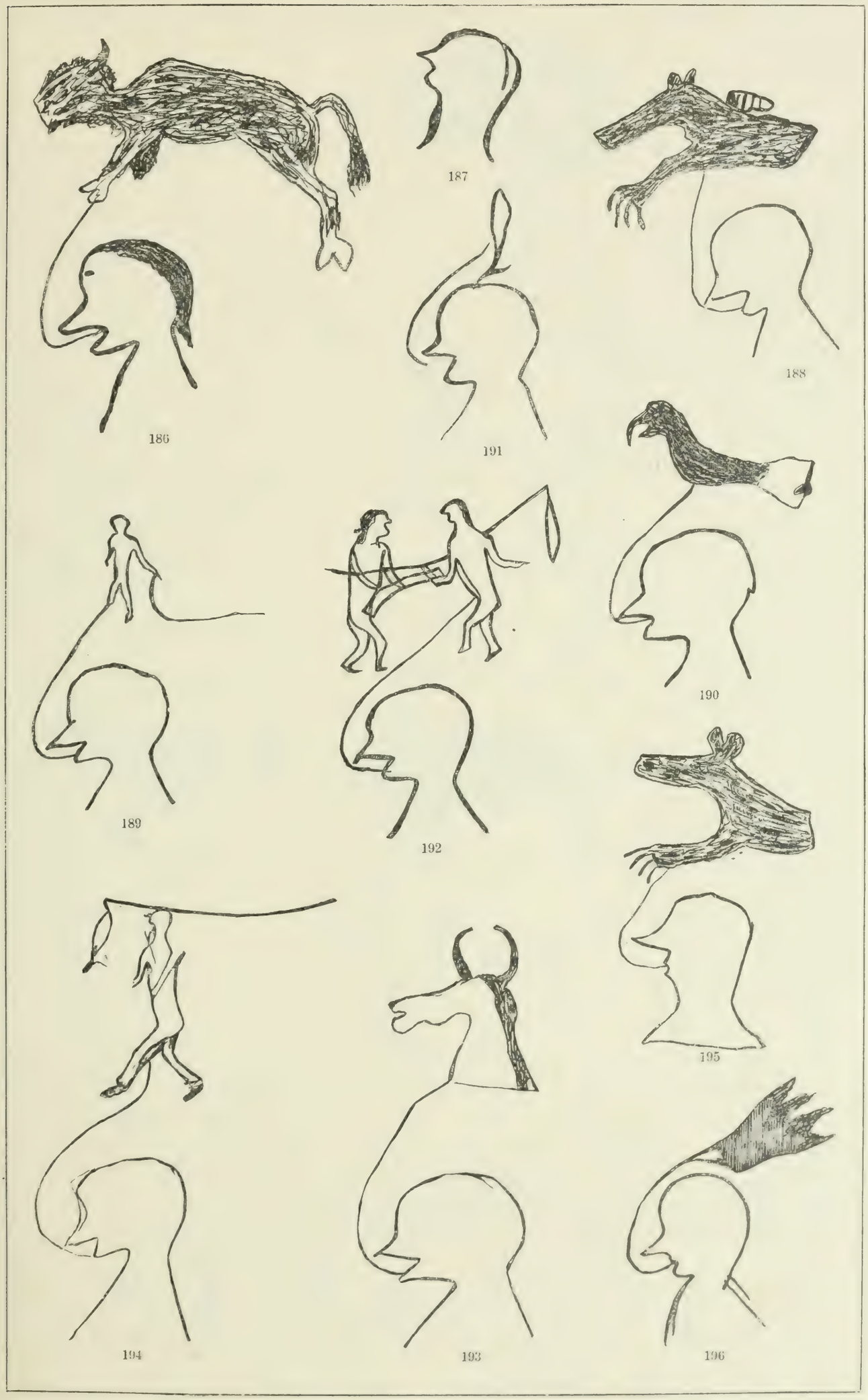
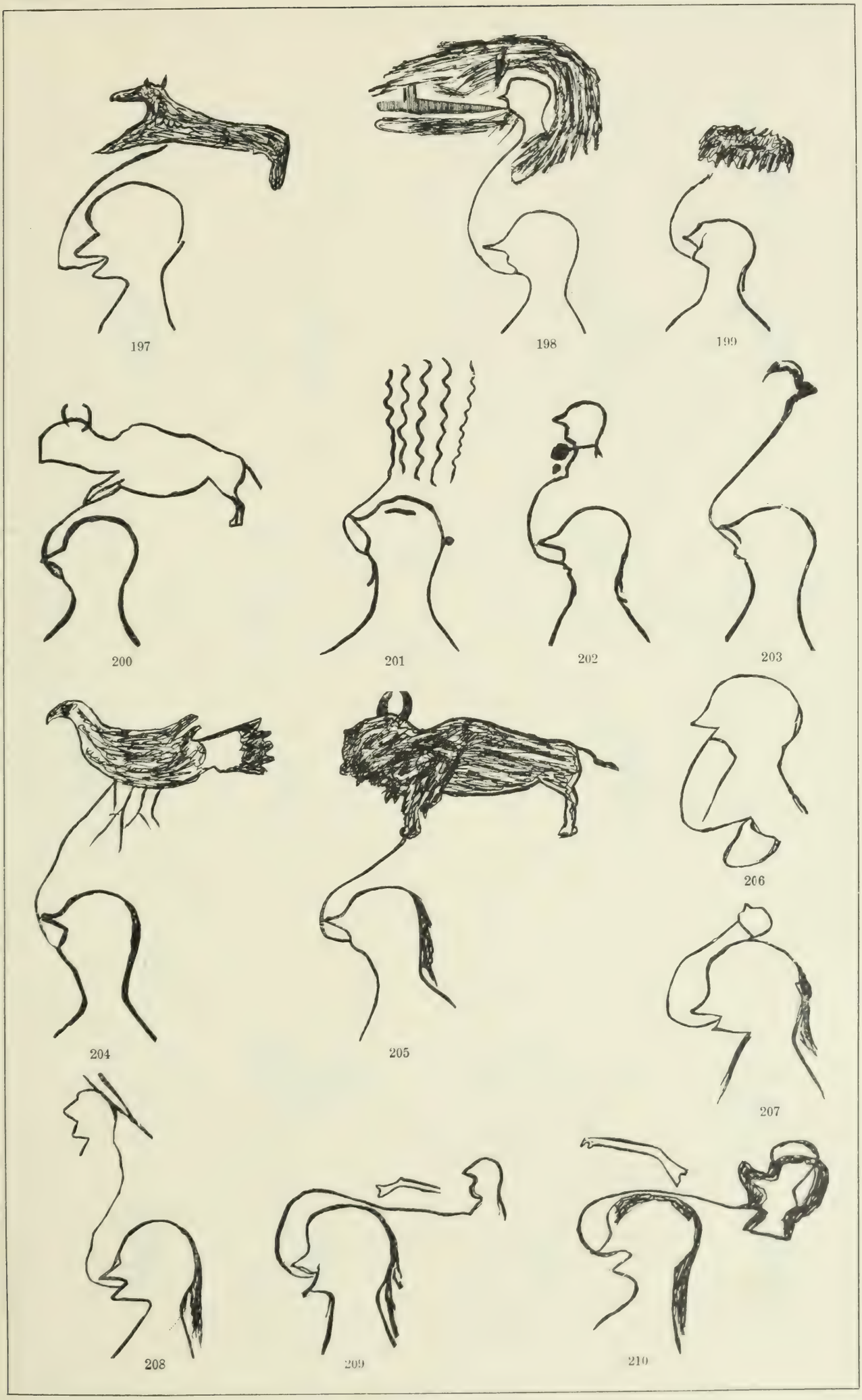
RED-CLOUD'S CENSUS.—BLACK-DEER'S BAND.



RED-CLOUD'S CENSUS.—BLACK-DEER'S BAND



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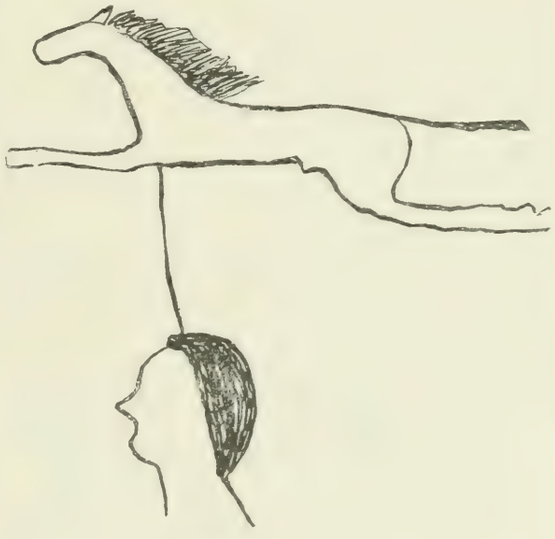

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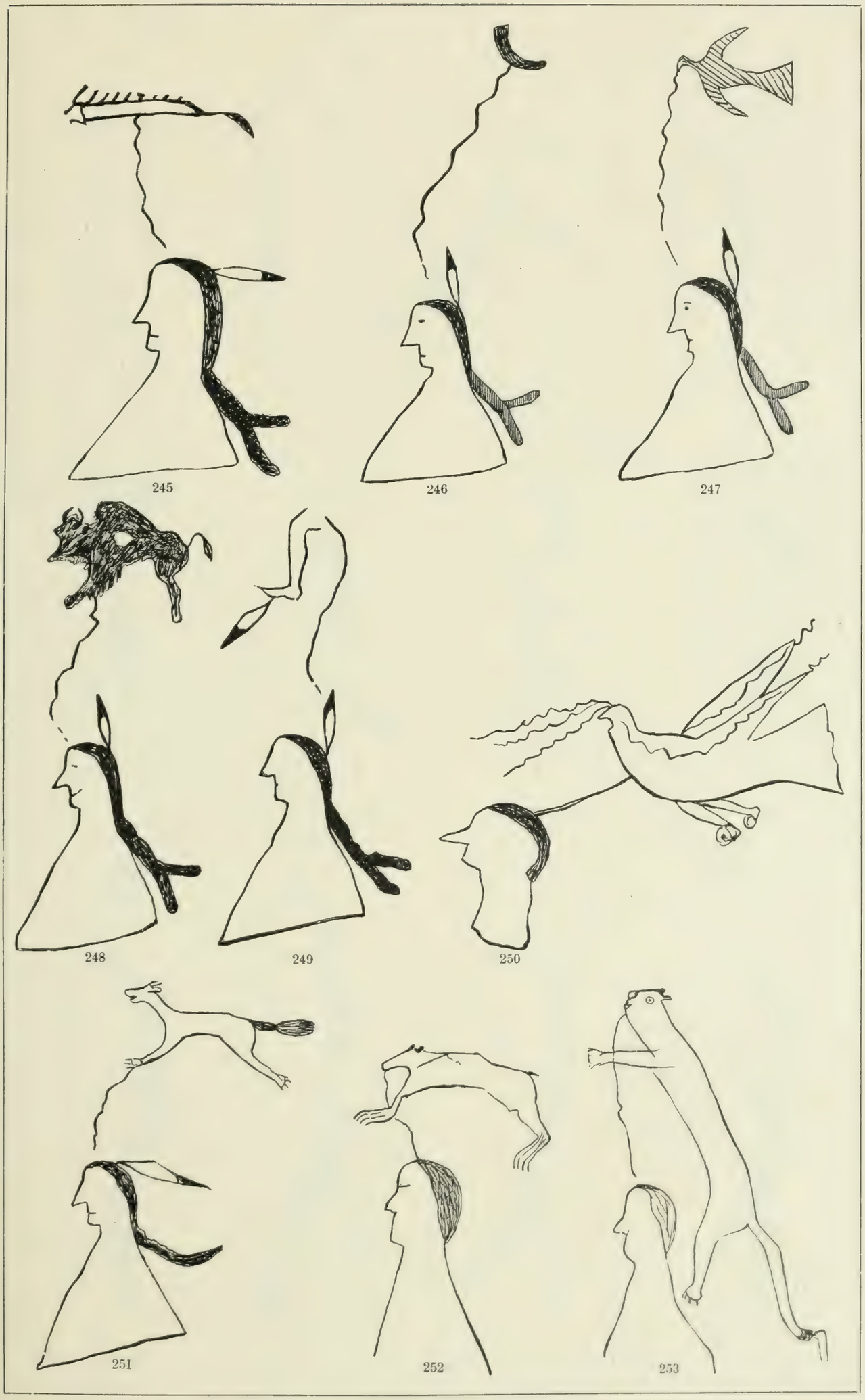

RED-CLOUD'S CENSUS.—HIGH-WOLF'S BAND.

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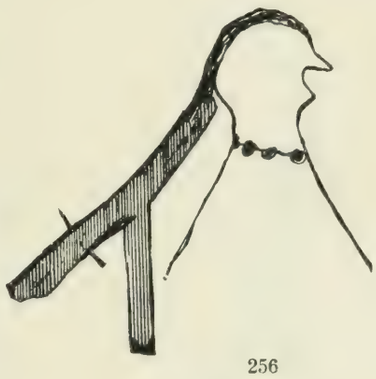

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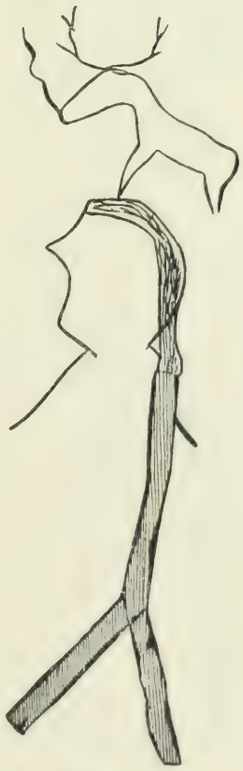

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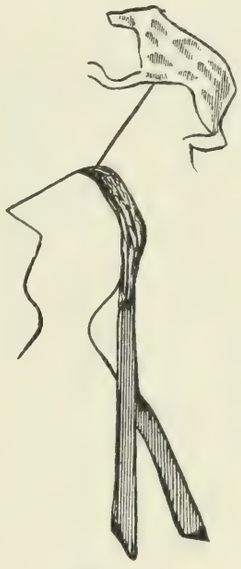

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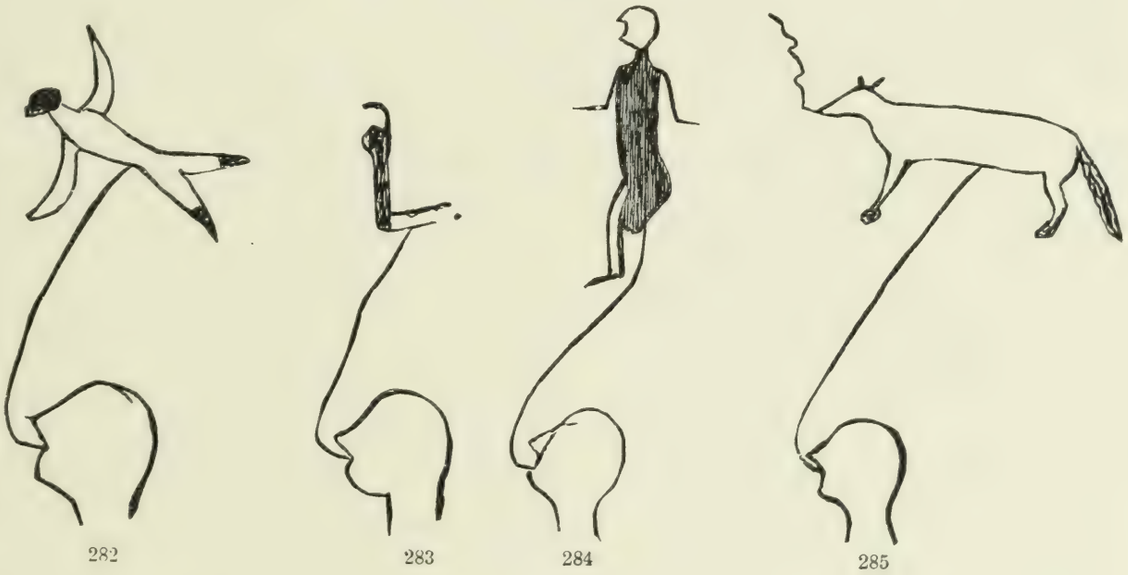

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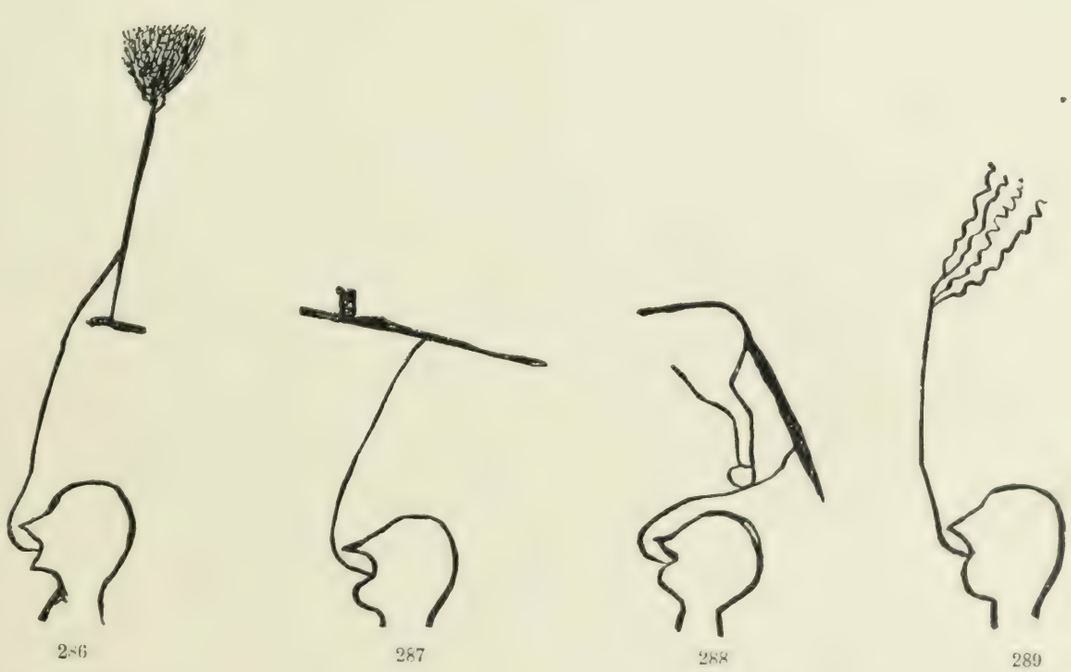

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210; fourth sheet, Nos. 211–235; fifth sheet, Nos. 236–253; sixth sheet, Nos. 254–277; seventh sheet, Nos. 278–289. This arrangement seems to imply seven bands or, perhaps, gentes.

Dr. V. T. McGillycuddy, Indian agent at Pine Ridge Agency, Dakota, in correspondence, gives the impression that the several pictographs, representing names, were attached as signatures by the several individuals to a subscription list for Dr. T. A. Bland, before mentioned, the editor of The Council Fire, in support of that publication, and with an agreement that each should give twenty-five cents. The subscribers were, in fact, the adherents of Red-Cloud. The motive for the collection of pictured names is of little consequence, its interest, as that of the foregoing Ogalala Roster, being in the mode of their portrayal, together with the assurance that they were the spontaneous and genuine work of the Indians concerned.

Many suggestions regarding the origin of heraldry and that of proper names can be obtained from this and the preceding series of plates.

The translation of the names corresponding with the figures is as follows:

English names of the figures in Red-Cloud's census.

No. 1. Chief Red-Cloud.
2. Top-Man.
3. Slow-Bear.
4. He-Dog.
5. Little Chief.
6. Red-Shirt.
7. White-Hawk.
8. Cloud Shield.
9. Good-Weasel.
10. Afraid-Eagle.
11. Bear-Brains.
12. War-Bonnet.
13. Little-Soldier.
14. Little-Dog.
15. Call-for.
16. Short-Bull.
17. White-Bird.
18. Painted-Face.
19. Iron-Beaver.
20. Big-Leggings.
21. Only-Man.
22. Mad-Hearted-Bull.
23. Running-Eagle.
24. Ring-Cloud.
25. White-Bird.
26. Arapaho.
27. Steals-Horses.
28. Kills-by-the-Camp.
29. Iron-Hawk.
30. Knock-a-hole-in-the-head.
31. Runs-around.
32. Kills-in-tight-place.
33. Scratch-the-Belly.
34. Singer.
35. Walking-Bull-Track.
36. War-Eagle.
37. Tree-in-the-Face.
38. Kills-the-Enemy-at-Night.
39. Wears-the-Bonnet.
40. War-Bonnet.
41. Shot-in-front-the-Lodge.
42. Kills-in-Lodge.
43. Kills-at-Night.
44. Tall-White-Man.
45. Strike-First.
46. Smoking-Bear.
47. Hump.
48. Shot-Close.
49. Blue-Horse.
50. Red-Elk.
51. Only-Man.
52. Bear-comes-out.

No. 53. Poor-Elk.
54. Blue-Handle.
55. Bad-Yellow-Hair.
56. Runs-by-the-Enemy.
57. Torn-Belly.
58. Roman-Nose.
59. Old-Cloud.
60. High-Cloud.
61. Bear-Looks-Back.
62. Shield-Bear.
63. Sees-the-Enemy.
64. Biting-Bear.
65. Cut-Through.
66. Red-Owl.
67. Good-Bird.
68. Red-Fly.
69. Kills-Enemy-at-Night.
70. Flat-Iron.
71. White-Horse.
72. Cheyenne-Butcher.
73. Red-Eagle.
74. Kills-Back.
75. Red-Bear.
76. Poor-Bear.
77. Runs off-the-Horse.
78. Bald-Eagle.
79. Shot-at.
80. Little-Ring.
81. Runs off-the-Horses.
82. Hard-Ground.
83. Shot-at-his-horse.
84. Red-Deer.
85. Yellow Fox.
86. Feather-on-his-head.
87. Little-Bear.
88. Spotted-Horse.
89. Takes-the-Gun.
90. Spotted-Face.
91. Got-there-first.
92. Leaves.
93. Big-Voice.
94. Poor-Dog.
95. Goes-through-the-Camp.
96. Big-Road.
97. Brings-lots-of-horses.
98. Little-Shell.

No. 99. Gap.
100. Fills-the-Pipe.
101. Lodge-Roll.
102. Red-Bull.
103. Runs-his-Horse.
104. Licks-with-his-tongue.
105. Old-Horse.
106. Tracks.
107. Bob-tail-Horse.
108. White-Elk.
109. Little-Sun.
110. Keeps-the-Battle.
111. High-Cloud.
112. Bone-Necklace.
113. Goes-Walking.
114. Iron-Horse.
115. Blue-Hatchet.
116. Eagle-Bird.
117. Iron-Bird.
118. Long-Panther.
119. Bull-Lance.
120. Black-Horse.
121. Pook-Skunk.
122. Own-the-Arrows.
123. Shot.
124. Red-Boy.
125. Bear-Head.
126. Hard.
127. Eagle-Horse.
128. Blue-Bird.
129. Good-Bird.
130. Caught-the-Enemy.
131. Leafing.
132. Horned-Horse.
133. White-Whirlwind.
134. Wolf-Ear.
135. Afraid-of-Elk.
136. Feathers.
137. Tall-Man.
138. Elk-Head.
139. Ring-Owl.
140. Standing-Bear.
141. Small-Ring.
142. Charging-Hawk.
143. Afraid-of-Bull.
144. Medicine-Horse.

No. 145. Two-Eagles.
146. Red-Shirt.
147. Bear-Nostrils.
148. Spotted-Horse.
149. Afraid-of-Bear.
150. Little-Bull.
151. Red-Hawk.
152. Bear-Paw.
153. Eagle-Horse.
154. Red-Beaver.
155. Spotted-Eagle.
156. Little-Crow.
157. Black-Horse.
158. Mouse.
159. Count-the-Nights.
160. White-Eagle.
161. Five-Thunders.
162. White-Horse.
163. Killed-First.
164. Scout.
165. Yellow-Horse.
166. Charge-After.
167. Black-Bear.
168. Kills-the-Enemy.
169. Wolf-stands on-a-Hill.
170. Eagle-Bear.
171. Little-Wolf.
172. Spotted-Elk.
173. Elk-walking-with-his-Voice.
174. Weasel-Bear.
175. Black-Elk.
176. Takes-Enemy.
177. Poor-Bull.
178. Eagle-Elk.
179. Thunder-Pipe.
180. Horse-comes-out.
181. Old-Mexican.
182. Shield.
183. Keeps-the-Battle.
184. Wolf-stands on-Hill.
185. Bear-Comes-Out.
186. Good-Bull.
187. Fog.
188. Bear-that-growls.
189. Drags-the-rope.
No. 190. White-tail.
191. Feathers.
192. Fighting-Cuss.
193. Horned-Horse.
194. Enemies-hit-him.
195. Black-Bear.
196. Red-War-Bonnet.
197. Black-Weasel.
198. Smokes-at-Night.
199. Little-Cloud.
200. Good-Bull.
201. Medicine.
202. Stone-Necklace.
203. Bad-Horn.
204. High-Eagle.
205. Black-Bull.
206. Man-with-heart.
207. Little-Ring.
208. Goes-in-Front.
209. Little-Fighter.
210. Mean-Boy.
211. Red-Hawk.
212. White-Bear.
213. Many-Shells.
214. Yellow-Knife.
215. Crazy-Head.
216. Shoots-the-Animal.
217. Kills two.
218. Fast-Horse.
219. Big-Turnip.
220. Yellow-Owl.
221. Red-Bull.
222. Garter.
223. Black-Fox.
224. Kills-two.
225. Grasp.
226. Medicine.
227. Leaves.
228. Big-Hand.
229. Gun.
230. Bad-Boy.
231. Warrior.
232. Afraid-of-Him.
233. Cloud-Ring.
234. Kills-the-Bear.
235. Comes-in-Sight.

No. 236. Sits-like-a-Woman.
237. Surrounds-them.
238. High-Bear.
239. Don't-turn.
240. Black-Bird.
241. Swallow.
242. Little-Elk.
243. Little-Bird.
244. Bear-Back.
245. Little-Back.
246. Buffalo-Horn.
247. Iron-Bird.
248. Bull.
249. Eagle-Track.
250. Medicine-Bird.
251. Fox.
252. White-Bear.
253. Tall-Panther.
254. Gun.
255. Ring.
256. Beads.
257. Wolf.
258. Black-Horse.
259. White-Horse.
260. Spotted-Owl.
261. Don't-turn.
262. Red-Star.
263. Big-Voiced-Eagle.
264. White-Elk.
265. Porcupine.
266. Noon.
267. Warrior.
268. Eagle-Feather.
269. Round.
270. Big-Thunder.
271. Shot-His-Horse.
272. Red-Bear.
273. Little-Moon.
274. Feather-Necklace.
275. Fast-Elk.
276. Black-Bull.
277. Light.
278. Black-Deer.
279. White-Cow-Man.
280. Horse —— the-Clothing.
281. Stabber.
282. Eagle-Swallow.
283. Afraid-of-him.
284. Red-Boy.
285. Dog-with-good-voice.
286. Tall-Pine.
287. Pipe.
288. Few-Tails.
289. Medicine-man.

The remark made above (page 176) in connection with the Ogalala Roster, acknowledging the paucity of direct information as to details while presenting the pictographs as sufficiently interpreted for the present purposes by the translation of the personal names, may be here repeated. The following notes are, however, subjoined as of some assistance to the reader:

No. 2. Top-man, or more properly "man above," is drawn a short distance above a curved line, which represents the character for sky inverted. The gesture for sky is sometimes made by passing the hand from east to west describing an arc. The Ojibwa pictograph for the same occurs in Plate IV, No. 1, beneath which a bird appears.

No. 9. The character is represented with two waving lines passing upward from the mouth, in imitation of the gesture-sign *good talk*, *spiritual talk*, as made by passing two extended and separated fingers (or all fingers separated) upward and forward from the mouth. This gesture is made when referring either to a shaman or to a christian clergyman, or to a house of worship, and the name seems to have been

translated here as "good," without sufficient emphasis, being probably more with the idea of "mystic."

No. 15. The gesture for *come* or *to call to one's self* is shown in this figure.

No. 24. The semicircle for cloud is the reverse in conception to that shown above in No. 2.

No. 26. Arapaho, in Dakota, magpiyato—*blue cloud*—is here shown by a circular cloud, drawn in blue in the original, inclosing the head of a man.

No. 38. Night appears to be indicated by the black circle around the head, suggested by the *covering over with darkness*, as shown in the gesture for night by passing both flat hands from their respective sides inwards and downwards before the body. The sign for *kill* is denoted here by the bow in contact with the head, a custom in practice among the Dakota of striking the dead enemy with the bow or *coup* stick. See also Figure 130, page 211.

No. 43. Night is here shown by the curve for *sky*, and the suspension, beneath it, of a star, or more properly in Dakota signification, a *night sun*—the moon.

No. 59. Cloud is drawn in blue in the original; *old* is signified by drawing a staff in the hand of the man. The gesture for old is made in imitation of walking with a staff.

No. 69. This drawing is similar to No. 38. The differentiation is sufficient to allow of a distinction between the two characters, each representing the same name, though two different men.

No. 131. The uppermost character is said to be drawn in imitation of a number of fallen leaves lying against one another, and has reference to the season when leaves fall—autumn.

No. 161. The thunder-bird is here drawn with five lines—voices—issuing from the mouth.

No. 201. The waving lines above the head signify *sacred*, and are made in gesture in a similar manner as that for *prayer* and *voice* in No. 9.

No. 236. This person is also portrayed in a recent Dakota record, where the character is represented by the "woman seated" only. The name of this man is not "Sits-like-a-Woman," but High-Wolf—Shúnka mánita waⁿgátia. This is an instance of giving one name in a pictograph and retaining another by which the man is known in camp to his companions.

No. 250. The word medicine is in the Indian sense, before explained, and would be more correctly expressed by the word *sacred*, or *mystic*, as is also indicated by the waving lines issuing from the mouth.

No. 289. The character for *sacred* again appears, attached to the end of the line issuing from the mouth.

PROPERTY MARKS.

The Serrano Indians in the vicinity of Los Angeles, California, formerly practiced a method of marking trees to indicate the corner boundaries of patches of land. According to Hon. A. F. Coronel, of the above-named city, the Indians owning areas of territory of whatever size would cut lines upon the bark of the tree corresponding to certain cheek lines drawn on their own faces, *i. e.*, lines running outward and downward over the cheeks or perhaps over the chin only, tattooed in color. These lines were made on the trees on the side facing the property, and were understandingly recognized by all. The marks were personal and distinctive, and when adopted by land owners could not be used by any other person. This custom still prevailed when Mr. Coronel first located in Southern California, about the year 1843. So is the account, but it may be remarked that the land was probably owned or claimed by a gens rather than by individuals, the individual ownership of land not belonging to the stage of culture of any North American Indians. Perhaps some of the leading members of the gens were noted in connection with the occupancy of the land, and their tattoo marks were the same as those on the trees. The correspondence of these marks is of special importance. It is also noteworthy that the designations common to the men and the trees were understood and respected.

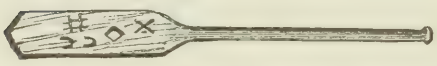


FIG. 80.—Boat paddle. Arikara.

Among the Arikara Indians a custom prevails of drawing upon the blade of a canoe or bull-boat paddle such designs as are worn by the chief and owner to suggest his personal exploits. This has to great extent been adopted by the Hidatsa and the Mandans. The marks are chiefly horseshoes and crosses (see Figure 80), referring to the capture of the enemy's ponies and to *coups* in warfare or defense against enemies.

The squaws being the persons who generally use the boats during the course of their labors in collecting wood along the river banks, or in ferrying their warriors across the water, have need of this illustration of their husbands' prowess as a matter of social status, it being also a matter of pride. The entire tribe being intimately acquainted with the courage and bravery of any individual, imposition and fraud in the delineation of any character are not attempted, as such would surely be detected and the impostor would be ridiculed if not ostracised. See in connection with the design last figured, others under the heading of Signs of Particular Achievements, page 186.

FIG. 81.—African property mark.

The brands upon cattle in Texas and other regions of the United

States where ranches are common, illustrate the modern use of property marks. A collection of these brands made by the writer compares unfavorably for individuality and ideography with the marks of Indians for similar purposes.

The following translation from Kunst and Witz der Neger (Art and Ingenuity of the Negro) is inserted for the purpose of comparison between Africa and America. The article was published at Munich, Bavaria, in Das Ausland, 1884, No. 1, p. 12.

"Whenever a pumpkin of surprisingly fine appearance is growing, which promises to furnish a desirable water-vase, the proprietor hurries to distinguish it by cutting into it some special mark with his knife, and probably superstitious feelings may co-operate in this act. I have reproduced herewith the best types of such property marks which I have been able to discover."

These property marks are reproduced in Figure 81.

STATUS OF THE INDIVIDUAL.

Several notices of pictographs under this head appear in other parts of this paper; among others, designations of chiefs, sub-chiefs, partisans, medicine men or shamans, horse thieves, and squaw men, are shown in the Winter Counts and in the Ogalala Roster. See also Figure 120, page 204. Captives are drawn in Figure 180, page 242. With reference to the status of women as married or single see pages 64 and 232. For widow, see page 197. Marks for higher and lower classes are mentioned on page 64.

To these may be added the following, contributed by Mr. Gatschet: Half-breed girls among the Klamaths of Oregon appear to have but one perpendicular line tattooed down over the chin, while the full-blood women have four perpendicular lines on the chin. Tattooing, when practiced at this day, is performed with needles, the color being prepared from charcoal.

SIGNS OF PARTICULAR ACHIEVEMENTS.

Eagle feathers are worn by the Hidatsa Indians to denote acts of courage or success in war. The various markings have different significations, as is shown in the following account, which, with sketches of the features made from the original objects, were obtained by Dr. Hoffman from the Hidatsa at Fort Berthold, Dakota, during 1881.

A feather, to the tip of which is attached a tuft of down or several strands of horse-hair, dyed red, denotes that the wearer has killed an enemy and that he was the first to touch or strike him with the coup stick. Figure 82.

FIG. 82.—First to strike enemy. Hidatsa.

FIG. 83.—Second to strike enemy. Hidatsa.

FIG. 84.—Third to strike enemy. Hidatsa.

A feather bearing one red bar, made with vermilion, signifies the wearer to have been the second person to strike the fallen enemy with the coup stick. Figure 83.

A feather bearing two red bars signifies that the wearer was the third person to strike the body. Figure 84.

A feather with three bars signifies that the wearer was the fourth to strike the fallen enemy. Figure 85. Beyond this number honors are not counted.

A red feather denotes that the wearer was wounded in an encounter with an enemy. Figure 86.

A narrow strip of rawhide or buckskin is wrapped from end to end with porcupine quills dyed red, though sometimes a few white ones are inserted to break the monotony of color; this strip is attached to the inner surface of the rib or shaft of the quill by means of very thin fibers of sinew. This signifies that the wearer killed a woman belonging to a hostile tribe. The figure so decorated is shown in Figure 87. In very fine specimens it will be found that the quills are directly applied to the shaft without resorting to the strap of leather.

FIG. 85.—Fourth to strike enemy. Hidatsa.

FIG. 86.—Wounded by an enemy. Hidatsa.

FIG. 87.—Killed a woman. Hidatsa.

The following scheme, used by the Dakotas, is taken from Dahcotah, or Life and Legends of the Sioux around Fort Snelling, by Mrs. Mary Eastman. New York, 1849. Colors are not given, but red undoubtedly predominates, as is known from personal observation.

A spot upon the larger web denotes that the wearer has killed an enemy. Figure 88.

Figure 89 denotes that the wearer has cut the throat of his enemy, and taken his scalp.

FIG. 88.—Killed an enemy. Dakota.

FIG. 89.—Cut throat and scalped. Dakota.

FIG. 90.—Cut enemy's throat. Dakota.

Figure 90 denotes that the wearer has cut the throat of his enemy.

Figure 91 denotes that the wearer was the third that touched the body of his enemy after he was killed.

FIG. 91.—Third to strike. Dakota.

FIG. 92.—Fourth to strike. Dakota.

Figure 92 denotes that the wearer was the fourth that touched the body of his enemy after he was killed.

FIG. 93.—Fifth to strike. Dakota.

FIG. 94.—Many wounds. Dakota.

Figure 93 denotes that the wearer was the fifth that touched the body of his enemy after he was killed.

Figure 94 denotes the wearer has been wounded in many places by his enemy.

The following variations in the scheme were noticed in 1883 among the Mdewakantanwan Dakotas near Fort Snelling, Minnesota.

In personal ornamentation, and for marks of distinction in war, feathers of the eagle are used as among the other bands of Dakotas.

A plain feather is used to signify that the wearer has killed an enemy, without regard to the manner in which he was slain.

When the end is clipped transversely, and the edge colored red, it signifies that the throat of the enemy was cut.

A black feather denotes that an Ojibwa woman was killed. Enemies are considered as Ojibwas, the latter being the tribe with whom the Mdewakantawan Dakotas have had most to do.

When a warrior has been wounded a red spot is painted upon the broad side of a feather. If the wearer has been shot in the body, arms, or legs, a similar spot, in red, is painted upon his clothing or blanket, immediately over the locality. These red spots are sometimes worked in porcupine quills, or in cotton fiber as obtained from the traders.

Marks denoting similar exploits are used by the Hidatsa, Mandan, and Arikara Indians. The Hidatsa claim to have been the originators of the devices, which were subsequently adopted by the Arikara with slight variation. All of the information with reference to the following figures, 95 to 103, was obtained by Dr. W. J. Hoffman, from chiefs of the several tribes at Fort Berthold, Dakota, during the summer of 1881.

The following characters are marked upon robes and blankets, usually in red or blue colors, and often upon the boat paddles. Frequently an Indian may be seen who has them even painted upon his thighs, though this is generally resorted to only on festal occasions, or for dancing:

FIG. 95.—Successful defense. Hidatsa, etc.

FIG. 96.—Two successful defenses. Hidata, etc.

Figure 95 denotes that the wearer successfully defended himself against the enemy by throwing up a ridge of earth or sand to protect the body.

Figure 96 signifies that the wearer has upon two different occasions defended himself by hiding his body within low earthworks. The character is merely a compound of two of the preceding marks placed together.

Figure 97 signifies that the one who carries this mark upon his blanket, leggings, boat paddle, or any other property, or his person, has distinguished himself by capturing a horse belonging to a hostile tribe.

FIG. 97.—Captured a horse. Hidatsa, etc.

Figure 98 signifies among the Hidatsa and Mandans that the wearer was the first person to strike a fallen enemy with a coup stick. It signifies among the Arikara simply that the wearer killed an enemy.

Figure 99 represents among the Hidatsa and Mandans the second person to strike a fallen enemy. It represents among the Arikara the first person to strike the fallen enemy.

Figure 100 denotes the third person to strike the enemy, according to

FIG. 98.—First to strike an enemy. Hidatsa.

FIG. 99.—Second to strike an enemy. Hidatsa.

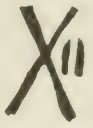


FIG. 100.—Third to strike an enemy. Hidatsa.

the Hidatsa and Mandan; the second person to strike him, according to the Arikara.

Figure 101 shows among the Hidatsa and Mandan the fourth person to strike the fallen enemy. This is the highest and last number; the fifth person to risk the danger is considered brave for venturing so near the ground held by the enemy, but has no right to wear the mark.

The same mark among the Arikara represents the person to be the third to strike the enemy.

Figure 102, according to the Arikara, represents the fourth person to strike the enemy.

According to the Hidatsa, the wearer of the accompanying mark, Figure 103, would have figured in four encounters; in the two lateral

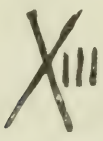


FIG. 101.—Fourth to strike an enemy. Hidatsa.

FIG. 102.—Fifth to strike an enemy. Arikara.

FIG. 103.—Struck four enemies. Hidatsa.

ones, each, he was the second to strike the fallen enemy, and in the upper and lower spaces it would signify that he was the third person upon two occasions.

The mark of a black hand, sometimes made by the impress of an actually blackened palm, or drawn natural size or less, was found upon articles of Ojibwa manufacture in the possession of Hidatsa and Arikara Indians at Fort Berthold, Dakota, in 1881. These Indians say it is an old custom, and signifies that the person authorized to wear the mark has killed an enemy. The articles upon which the designs occurred came from Red Lake Reservation, Minnesota, the Indians of the latter locality frequently going west to Fort Berthold to trade bead and other work for horses.

Further signs of particular achievements are given in Figures 174, 175, 176, 177, and 179, and others may be noticed frequently in the Dakota Winter Counts.

RELIGIOUS.

Under this head pictographs already known may be divided into those relating to—

1. Mythic personages.
2. Shamanism.
3. Dances and ceremonies.
4. Mortuary practices.
5. Charms and fetiches.

MYTHIC PERSONAGES.

Reference may be made to the considerable number of pictographs of this character in Schoolcraft, more particularly in his first volume; also to the Walum-Olum or Bark-Record of the Lenni-Lenape, which was published in Beach's "Indian Miscellany," Albany, 1877; and since in The Lenâpé and their Legends: By Dr. D. G. Brinton. Several examples are also to be found in other parts of the present paper.

Some forms of the Thunder-Bird are here presented, as follows:

FIG. 104.—Thunder-Bird. Dakota.

Figures 104 and 105 are forms of the thunder-bird found in 1883 among the Dakotas near Fort Snelling, drawn and interpreted by themselves. They are both winged and have waving lines extending from the mouth downward, signifying lightning. It is noticeable that Figure 105 placed vertically, then appearing roughly as an upright human figure, is almost identically the same as some of the Ojibwa meda or spirit figures represented in Schoolcraft, and also on a bark Ojibwa record in the possession of the writer.

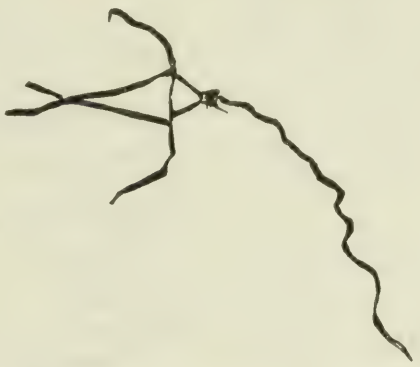


FIG. 105.—Thunder-bird. Dakota.

Figure 106 is another and more cursive form of the thunder-bird obtained at the same place and time as those immediately preceding. It is wingless, and, with changed position or point of view, would suggest a headless human figure.

FIG. 106.—Thunder-bird. Wingless. Dakota.

The blue thunder-bird, Figure 107, with red breast and tail, is a copy of one worked in beads, found at Mendota, Minnesota. At that place stories were told of several Indians who had presentiments that the thunder-bird was coming to kill them, when they would so state the case to their friends that they might retire to a place of safety, while the victim of superstition would go out to an elevated point of land or upon the prairie to await his expected doom.

Frequently, no doubt on account of the isolated and elevated position of the person in a thunder storm, accidents of this kind do occur, thus giving notoriety to the presentiment above mentioned.

A still different form of the Dakota thunder-bird is reproduced in Mrs. Eastman's Dahcotah, *op. cit.*, page 262. See also page 181 *supra*.

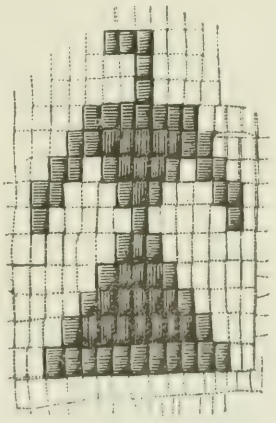


FIG. 107.—Thunder-bird. Dakota.

Figure 108 is "Skam-son," the thunder-bird, a tattoo mark copied from the back of an Indian belonging to the Laskeek village of the Haida tribe, Queen Charlotte's Island, by Mr. James G. Swan.

Figure 109 is a Twana thunder bird, as reported by Rev. M. Eells in Bull. U. S. Geol. and Geog. Survey, III, p. 112.

There is at Eneti, on the reservation [Washington Territory], an irregular basaltic rock, about 3 feet by 3 feet and 4 inches, and a foot and a half high. On one side there has been hammered a face, said to be the representation of the face of the thunder bird, which could also cause storms.

The two eyes are about 6 inches in diameter and 4 inches apart and the nose about 9 inches long. It is said to have been made by some man a long time ago, who felt very badly, and went and sat on the rock, and with another stone hammered out the

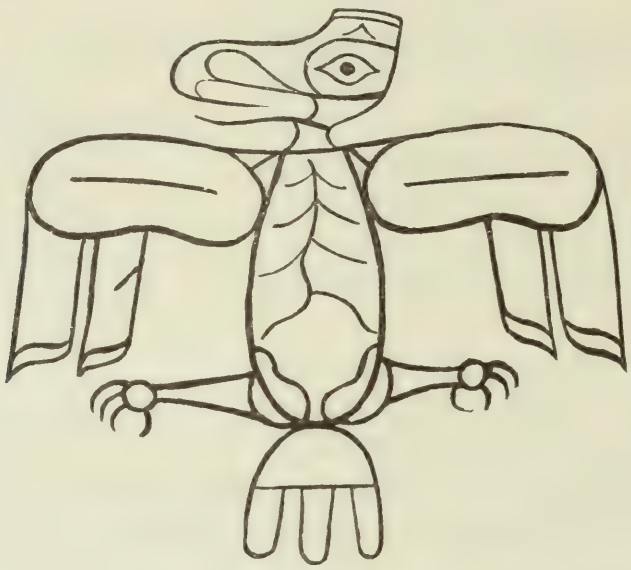


FIG. 108.—Thunder-bird. Haida.

eyes and nose. For a long time they believed that if the rock was shaken it would cause rain, probably because the thunder bird was angry.

Graphic representations of Atotarko and of the Great Heads are

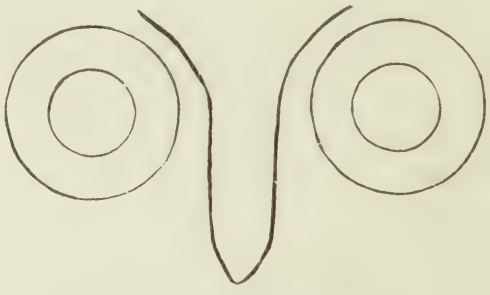


FIG. 109.—Thunder-bird. Twana.

shown in Mrs. Erminnie A. Smith's Myths of the Iroquois, in the Second Annual Report of the Bureau of Ethnology. Mythic Personages are also presented in aboriginal drawing by Mr. Charles G. Leland in his work, the Algonquin Legends of New England, etc. Boston, 1884.

SHAMANISM.

The term Shamanism is a corrupted form of the Sanscrit word for ascetic. Its original application was to the religion of certain tribes of northern Asia, but in general it expresses the worship of spirits with magic arts and fetich-practices. The Shaman or priest pretends to control by incantations and ceremonies the evil spirits to whom death, sickness, and other misfortunes are ascribed. This form or stage of religion

is so prevalent among the North American Indians that the adoption of the term Shaman here is substantially correct, and it avoids both the stupid expression "medicine-man" of current literature and the indefinite title priest, the associations with which are not appropriate to the Indian religious practitioner. The statement that the Indians worship one "Great Spirit" or single overruling personal god is erroneous. That philosophical conception is beyond the stage of culture reached by them and was not found in any tribe previous to missionary influence. Their actual philosophy can be expressed far more objectively and therefore pictorially.

Many instances of the "Making Medicine" are shown in the Dakota Winter Counts; also graphic expressions regarding magic. Especial reference may be made to American-Horse's count for the years 1824–'25 and 1843–'44, in the Corbusier Winter Counts.

Figure 110 was copied from a piece of walrus ivory in the museum of the Alaska Commercial Company, of San Francisco, California, by Dr. Hoffman, and the interpretation is as obtained from an Alaskan native.

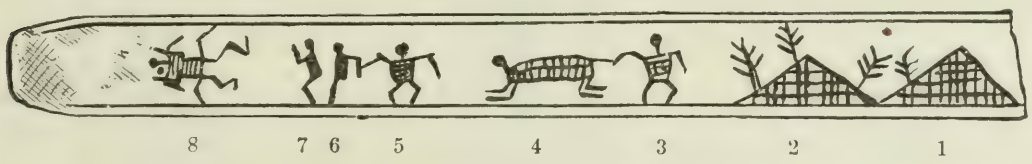


FIG. 110.—Shaman exorcising Demon. Alaska.

1, 2. The Shaman's summer habitations, trees growing in the vicinity.

3. The Shaman, who is represented in the act of holding one of his "demons." These "evil spirits" are considered as under the control of the Shaman, who employs them to drive other "evil beings" out of the bodies of sick men.

4. The demon or aid.

5. The same Shaman exorcising the demons causing the sickness.

6, 7. Sick men, who have been under treatment, and from whose bodies the "evil beings" or sickness has been expelled.

8. Two "evil spirits" which have left the bodies of Nos. 6 and 7.

Fig. 111 represents a record of a Shamanistic nature, and was copied by Dr. Hoffman from an ivory bow in the museum of the Alaska Commercial Company in 1882. The interpretation was also obtained at the same time from an Alaskan native, with text in the Kiatexamut dialect of the Innuit language.

The rod of the bow upon which the characters occur is here represented in three sections, A, B, and C. A bears the beginning of the narrative, extending over only one-half of the length of the rod. The course of the inscription is then continued on the adjacent side of the rod at the middle, and reading in both directions (section B and C), towards the two files of approaching animals. B and C occupy the whole of one side.

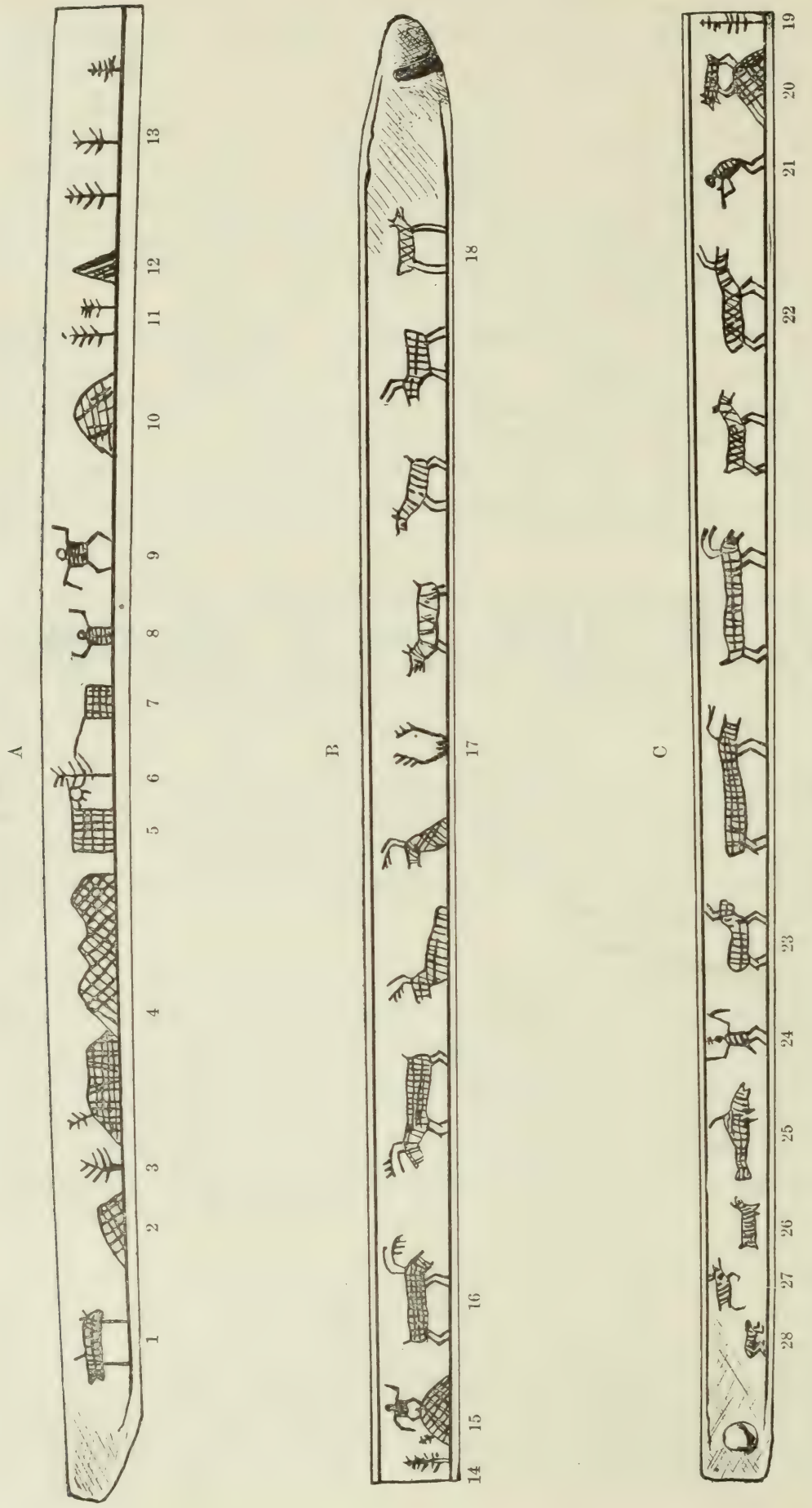


FIG. 111.—Supplication for success. Alaska.

The following is the explanation of the characters.

A. No. 1. Baidarka or skin boat resting on poles.
2. Winter habitation.
3. Tree.
4. Winter habitations.
5. Store-house.
6. Tree. Between this and the store-house is placed a piece of timber, from which are suspended fish for drying.
7. Store-house. From 1 to 7 represents an accumulation of dwellings, which signifies a settlement, the home of the person to whom the history relates.
8. The hunter sitting on the ground, asking for aid, and making the gesture for supplication.
9. The Shaman to whom application is made by the hunter desiring success in the chase. The Shaman has just finished his incantations, and while still retaining his left arm in the position for that ceremony, holds the right toward the hunter, giving him the success requested.
10. The Shaman's winter lodge.
11. Trees.
12. Summer habitation of the Shaman.
13. Trees in vicinity of the Shaman's residence.

B. No. 14. Tree.
15. A Shaman standing upon his lodge, driving back game which had approached a dangerous locality. To this Shaman the hunter had also made application for success in the chase, but was denied, hence the act of the Shaman.
16. Deer leaving at the Shaman's order.
17. Horns of a deer swimming a river.
18. Young deer, apparently, from the smaller size of the body and unusually long legs.

C. No. 19. A tree.
20. The lodge of the hunter (A. 8), who, after having been granted the request for success, placed his *totem* upon the lodge as a mark of gratification and to insure greater luck in his undertaking.
21. The hunter in the act of shooting.
22–23. The game killed, consisting of five deer.
24. The demon sent out by the Shaman (A. 9) to drive the game in the way of the hunter.
25–28. The demon's assistants.

The original text above mentioned with interlinear translation, is as follows:

Xu-nŭm′-cu-a u-xlá-qa, pi-cú-qi-a kú da ku-lú-ni, ka-xá-qa-lŭk′.
Settlement man came, hunting go wanted (to), (and) Shaman (he) asked.

Ká-xa-qlŭm′ mi-ná-qa lu-qú ta-xlí-mu-nŭk tu-dú-ia-nŭk. Ká-xlá-lŭk
Shaman gave to him five deer. Shaman
ú-qli-ni uⁿ-i-lum′ kaí-na-nŭn′ ka-xá-hu pi-gú, í-u-nĭ
went to the top of lodge (winter habitation) (where), standing on top spirits [incantations] made he, devil
aú-qkua-glu-hu té-itc-lu-gĭ′ té xle-mĕn′ tun dú-ia-gūt, taú-na-cŭk
sent to him [the hunter] (and) brought to him five deer, same man
pi-xlu-nĭ′ ta-xlí-mu-nŭk tun-duĭ′-a-xa-nŭk′ tú-gu-xlí-u-qi. A-xlí-lum
he caught [secured] five deer killed. Another
Ká xla-qlŭm′ tu-mú-qteu-gí.
Shaman not gave them.
(To whom application had been made previously.)

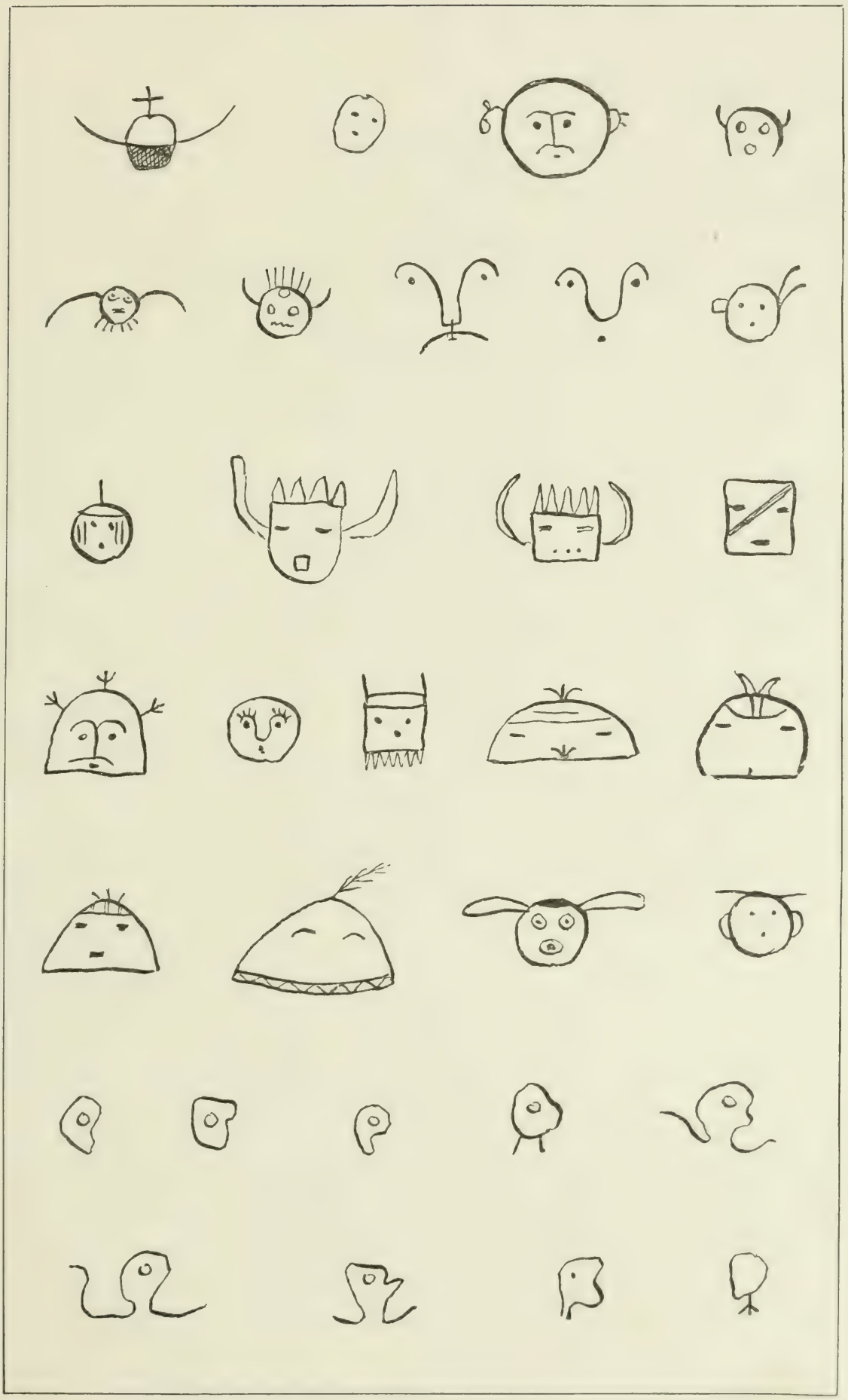
DANCES AND CEREMONIES.

Plate LXXXI exhibits drawings of various masks used in dancing, the characters of which were obtained by Mr. G. K. Gilbert from rocks at Oakley Springs, and were explained to him by Tubi, the chief of the Oraibi Pueblos. They probably are in imitation of masks, as used by the Moki, Zuñi, and Rio Grande Pueblos.

Many examples of masks, dance ornaments, and fetiches used in ceremonies are reported and illustrated in the several papers of Messrs. Cushing, Holmes, and Stevenson in the Second Annual Report of the Bureau of Ethnology. Paintings or drawings of many of them have been found on pottery, on shells, and on rocks.

In this connection the following extract from a letter dated Port Townsend, Washington, June 1, 1883, from Mr. James G. Swan, will be acceptable: "You may remember my calling your attention about a year since to the fact that a gentleman who had been employed on a preliminary survey for the Mexican National Construction Company had called on me and was astonished at the striking similarity between the wooden-carved images of the Haida Indians and the terra-cotta images he had found in the railroad excavations in Mexico.

"I have long entertained the belief that the coast tribes originated among the Aztecs, and have made it a subject of careful study for many years. I received unexpected aid by the plates in Habel's Investigations in Central and South America. I have shown them to Indians of various coast tribes at various times, and they all recognize certain of those pictures. No. 1, Plate 1, represents a priest cutting off the head of his victim with his stone knife. They recognize this, because they always cut off the heads of their enemies slain in battle; they never scalp. The bird of the sun is recognized by all who have seen the picture as the thunder bird of the coast tribes. But the most singular evidence I have seen is in Cushing's description of the Zuñi Indian, as published in the Century Magazine. The Haidas recognize the scenes, particularly the masquerade scenes in the February [1883] number, as similar to their own tomanawos ceremonies. I have had at least a dozen



MOKI MASKS ETCHED ON ROCKS. ARIZONA.

BUFFALO-HEAD MONUMENT.

Haida men and women at one time looking at those pictures and talk and explain to each other their meaning. One chief who speaks English said to me after he had for a long time examined the pictures, 'Those are our people; they do as we do. If you wish, I will make you just such masks as those in the pictures.'

"These Indians know nothing, and recognize nothing in the Hebrew or Egyptian, the Chinese or Japanese pictures, but when I show them any Central or South American scenes, if they do not understand them they recognize that they are 'their people.'"

According to Stephen Powers (in Contrib. to N. A. Ethnol. III, p. 140), there is at the head of Potter Valley, California, "a singular knoll of red earth which the Tátu or Hūchnom believe to have furnished the material for the creation of the original coyote-man. They mix this red earth into their acorn bread, and employ it for painting their bodies on divers mystic occasions." Mr. Powers supposed this to be a ceremonial performance, but having found the custom to extend to other tribes he was induced to believe the statements of the Indians "that it made the bread sweeter and go further."

See also the mnemonic devices relative to Songs, page 82, and to Traditions, page 84; also page 237.

Plate LXXXII represents stone heaps surmounted by buffalo skulls found near the junction of the Yellowstone and Missouri Rivers by Prince Maximilian zu Wied, and described in his Reise in das Innere Nord-America. Coblenz, 1841, II, p. 435. Atlas plate 29. The description by him, as translated in the London edition, is as follows: "From the highest points of this ridge of hills, curious signals are perceived at certain distances from one another, consisting of large stones and granite blocks, piled up by the Assiniboins, on the summits of each of which are placed Buffalo skulls, and which were erected by the Indians, as alleged, for the purpose of attracting the Bison herds, and to have a successful hunt."

This objective monument is to be compared with the pictographs above, "making buffalo medicine," frequent in the Dakota Winter Counts.

Descriptions of ceremonies in medicine lodges and in the initiation of candidates to secret associations have been published with and without illustrations. The most striking of these are graphic ceremonial charts made by the Indians themselves. Figure 38, on page 36, is connected with this subject, as is also No. 7 of Figure 122, page 205. A good illustration is to be found in Mrs. Eastman's Dahcotah, or Life and Legends of the Sioux, page 206. Sketches, with descriptions of drawings used in the ceremonials of the Zuñi and Navajo, have been made by Messrs. Cushing and Stevenson and Dr. Matthews, but cannot be published here.

Figure 111*a* was drawn and interpreted by Naumoff, a Kadiak native, in San Francisco, California, in 1882.

It represents the ground plan of a Shaman's lodge with the Shaman curing a sick man.

The following is the explanation:

No. 1. The entrance to the lodge.

No. 2. The fire place.

No. 3. A vertical piece of wood upon which is placed a cross-piece, upon each end of which is a lamp.

No. 4. The musicians seated upon the raised seats furnishing drumming and music to the movements of the Shaman during his incanta-

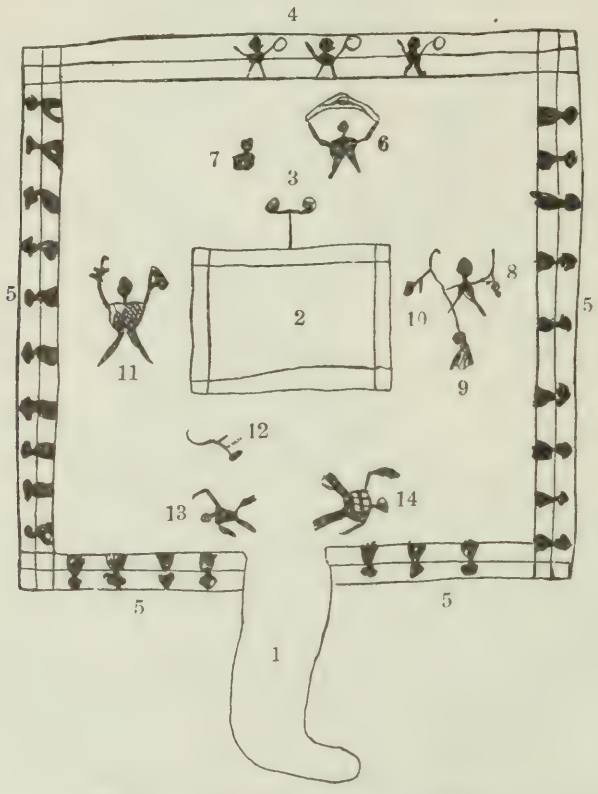


Fig. 111*a*. Shaman's lodge. Alaska.

tions in exorcising the "evil spirit" supposed to have possession of the patient.

No. 5. Visitors and friends of the afflicted seated around the walls of the lodge.

No. 6. The Shaman represented in making his incantations.

No. 7. The patient seated upon the floor of the lodge.

No. 8. Represents the Shaman in another stage of the ceremonies, driving out of the patient the "evil being."

No. 9. Another figure of the patient; from his head is seen to issue a line connecting it with No. 10.

No. 10. The "evil spirit" causing the sickness.

No. 11. The Shaman in the act of driving the "evil being" out of the room. In his hands are sacred objects, his personal fetish, in which the power lies.

No. 12. The flying "evil one."

Nos. 13, 14. Are assistants to the Shaman, stationed at the entrance to hit and hasten the departure of the evil being.

A chart of this character appears to have been seen among the natives of New Holland by Mr. James Manning, but not copied or fully described in his Notes on the Aborigines of New Holland (Jour. of Royal Society, New South Wales, Vol. XVI, p. 167). He mentions it in connection with a corrobery or solemn religious ceremony among adults, as follows: "It has for its form the most curious painting upon a sheet of bark, done in various colors of red, yellow, and white ochre, which is exhibited by the priest." Such objects would be highly important for comparison, and their existence being known they should be sought for.

MORTUARY PRACTICES.

Several devices indicating death are presented under other headings of this paper. See, for example, page 103 and the illustrations in connection with the text.

According to Powers, "A Yokaia widow's style of mourning is peculiar. In addition to the usual evidences of grief she mingles the ashes of her dead husband with pitch, making a white tar or unguent, with which she smears a band about 2 inches wide all around the edge of the hair (which is previously cut off close to the head), so that at a little distance she appears to be wearing a white chaplet." (See Contrib. to N. A. Ethnol., III, p. 166.) Mr. Dorsey reports that mud is used by a mourner in the sacred-bag war party among the Osages. Many objective modes of showing mourning by styles of paint and markings are known, the significance of which are apparent when discovered in pictographs.

Figure 112 is copied from a piece of ivory in the museum of the Alaska Commercial Company, San Francisco, California, and was interpreted by an Alaskan native in San Francisco in 1882.

No. 1. Is a votive offering or "Shaman stick," erected to the memory of one departed. The "bird" carvings are considered typical of "good spirits," and the above was erected by the remorse-stricken individual, No. 3, who had killed the person shown in No. 2.

FIG. 112.—Votive offering. Alaska.

No. 2. The headless body represents the man who was killed. In this respect the Ojibwa manner of drawing a person "killed" is similar.

No. 3. The individual who killed No. 2, and who erected the "grave-post" or "sacred stick." The arm is thrown earthward, resembling the Blackfeet and Dakota gesture for "kill."

The following is the text in Aígalúxamut:

Nu-ná-mu-quk′ á-x'l-xik′ aí-ba-li to-qgú-qlu gú nú-hu tcuk nac-quí
Place two quarrel (with) one another. (one) killed him (the other) (with a) large knife took head
qlu-gú, i-nó-qtclu-gu; Ka-sá-ha-lik′ na-bŏn′ ca-gú-lŭk a-gú-nŭ-qua-qlu-hŭ'.
off. laid him down; (buried) Shaman stick (offering) bird (wooden) to set (or place) on the top of (over).

That portion of the Kauvuya tribe of Indians in Southern California known as the Playsanos, or *lowlanders*, formerly inscribed characters upon the gravestones of their dead, relating to the pursuits or good qualities of the deceased. Dr. W. J. Hoffman obtained several pieces or slabs of finely-grained sandstone near Los Angeles, California, during the summer of 1884, which had been used for this purpose. Upon these were the drawings, in incised lines, of the Fin-back whale, with figures of men pursuing them with harpoons. Around the etchings were close parallel lines with cross lines similar to the drawings made on ivory by the southern Innuit of Alaska.

GRAVE-POSTS.

Figures 113 and 114 were procured from a native Alaskan by Dr. Hoffman in 1882, and explained to him to be drawings made upon grave-posts.

Drawings similar to these are made on slabs of wood by devoted friends, or relatives, to present and perpetuate the good qualities of a deceased native. The occupation is usually referred to, as well as articles of importance of which the departed one was the possessor.

1

Figure 113 refers to a hunter, as land animals are shown as the chief pursuit. The following is the explanation of the characters:

2

1. The baidarka, or boat, holding two persons; the occupants are shown, as are also the paddles, which project below the horizontal body of the vessel.

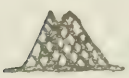
3

2. A rack for drying skins and fish. A pole is added above it, from which are seen floating streamers of calico or cloth.

4

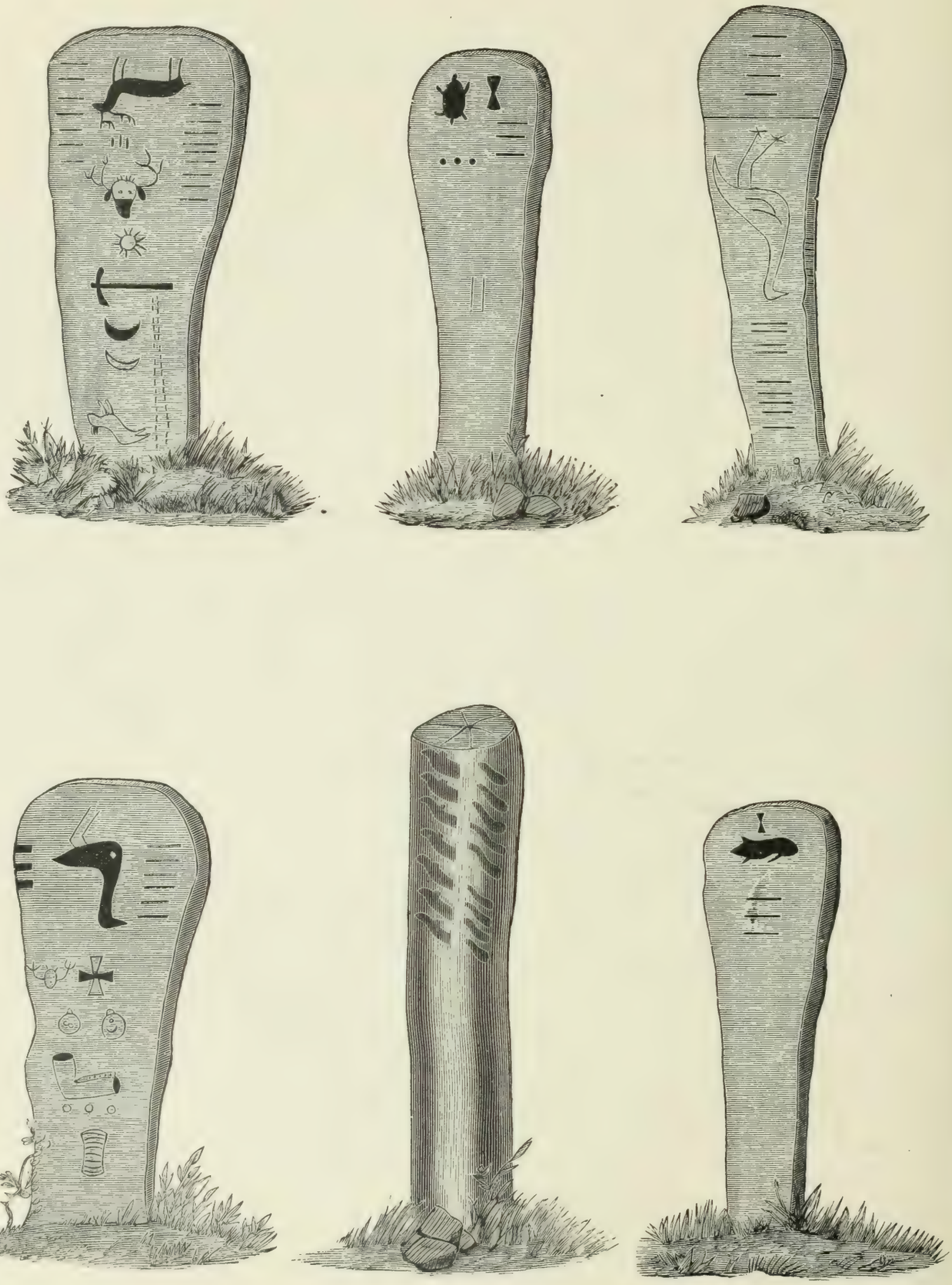
3. A fox.

4. A land otter.


5

5. The hunter's summer habitations. These are temporary dwellings and usually constructed at a distance from home. This also indicates the profession of a skin-hunter, as the permanent lodges, indicated as winter houses, *i. e.*, with round or dome-like roof, are located near the sea-shore, and summer houses are only needed when at some distance from home, where a considerable length of time is spent.

FIG. 113.—Grave-post. Alaska.



OJIBWA GRAVE-POSTS.

The following is the explanation of Figure 114. It is another design for a grave-post, but refers to a fisherman:

1. The double-seated baidarka, or skin canoe.
2. A bow used in shooting seal and other marine animals.
3. A seal.
4. A whale.

The summer lodge is absent in this, as the fisherman did not leave the sea-shore in the pursuit of game on land.

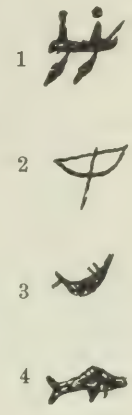


FIG. 114.—Grave-post. Alaska.

Figure 115 is a native drawing of a village and neighboring burial-ground, prepared by an Alaskan native in imitation of originals seen by him among the natives of the mainland of Alaska, especially the Aigalúqamut. Carvings are generally on walrus ivory; sometimes on wooden slats. In the figure, No. 7 is a representation of a grave-post in position, bearing an inscription similar in general character to those in the last two preceding figures.

FIG. 115.—Village and burial-grounds. Alaska.

The details are explained as follows:

No. 1, 2, 3, 4. Various styles of habitations, representing a settlement.

5. An elevated structure used for the storage of food.

6. A box with wrappings, containing the corpse of a child. The small lines, with ball attached, are ornamented appendages consisting of strips of cloth or skin, with charms, or, sometimes, tassels.

7. Grave-post, bearing rude illustrations of the weapons or implements used by a person during his life.

8. A grave scaffold, containing adult. Besides the ornamental appendages, as in the preceding, there is a "Shaman stick" erected over the box containing the corpse as a mark of good wishes of a sorrowing survivor. See object No. 1, in Figure 112.

The following extract from Schoolcraft (Hist. Indian Tribes of the United States, 1851, Vol. I, p. 356, Fig. 46) relates to the burial posts used by the Sioux and Chippewas. Plate LXXXIII is after the illustration given by this author in connection with the account quoted:

Among the Sioux and Western Chippewas, after the body has been wrapped in its best clothes and ornaments, it is then placed on a scafford, or in a tree, where it remains until the flesh is entirely decayed; after which the bones are buried, and the grave-posts fixed. At the head of the grave a tabular piece of cedar, or other wood, called the adjedatig, is set. This grave-board contains the symbolic or representative figure which records, if it be a warrior, his totem; that is to say, the symbol of his family, or surname, and such arithmetical or other devices as serve to denote how many times the deceased has been in war parties, and how many scalps he had taken

from the enemy; two facts from which his reputation is essentially to be derived. It is seldom that more is attempted in the way of inscription. Often, however, distinguished chiefs have their war-flag, or, in modern days, a small ensign of American fabric, displayed on a standard at the head of their graves, which is left to fly over the deceased till it is wasted by the elements. Scalps of their enemies, feathers of the bald and black eagle, the swallow-tailed falcon, or some carnivorous bird, are also placed, in such instances, on the adjedatig, or suspended, with offerings of various kinds, on a separate staff. But the latter are super-additions of a religious character, and belong to the class of the ke-ke-wa-o-win-an-tig. The building of a funeral fire on recent graves, is also a rite which belongs to the consideration of their religious faith.

The following quotations and illustrations are taken from Dr. Ferdinand von Hochstetter's New Zealand, before cited. That author says on page 437 *et seq*:

The carved Maori-figures, which are met with on the road, are the memorials of chiefs, who, while journeying to the restorative baths of Rotorua, succumbed to their ills on the road. Some of the figures are decked out with pieces of clothing or kerchiefs; and the most remarkable feature in them is the close imitation of the tattoo-

FIG. 116.—New Zealand grave effigy.

ing of the deceased, by which the Maoris are able to recognize for whom the monument has been erected. Certain lines are peculiar to the tribe, others to the family, and again others to the individual. A close imitation of the tattooing of the face, therefore, is to the Maori the same as to us a photographic likeness; it does not require any description of name.

A representation of one of these carved posts is given in Figure 116.

Another carved post of like character is represented in Figure 117, concerning which the same author says, page 338:

"Beside my tent, at Tahuahu, on the right bank of the Mangapu, there stood an odd half decomposed figure carved of wood; it was designated to me by the natives as a Tiki, marking the tomb of a chief."

The same author states, page 423: "The dwellings of the chiefs at Ohinemutu are surrounded with inclosures of pole-fences; and the Whares and Wharepunis, some of them exhibiting very fine specimens of the Maori order of architecture, are ornamented with grotesque wood-carvings. The annexed wood-cut [here reproduced as Figure 118] is intended as an illustration of some of them. The gable figure, with the lizard having six feet and two heads, is very remarkable. The human figures are not idols, but are intended to represent departed sires of the present generation."

FIG. 117.—New Zealand grave-post.

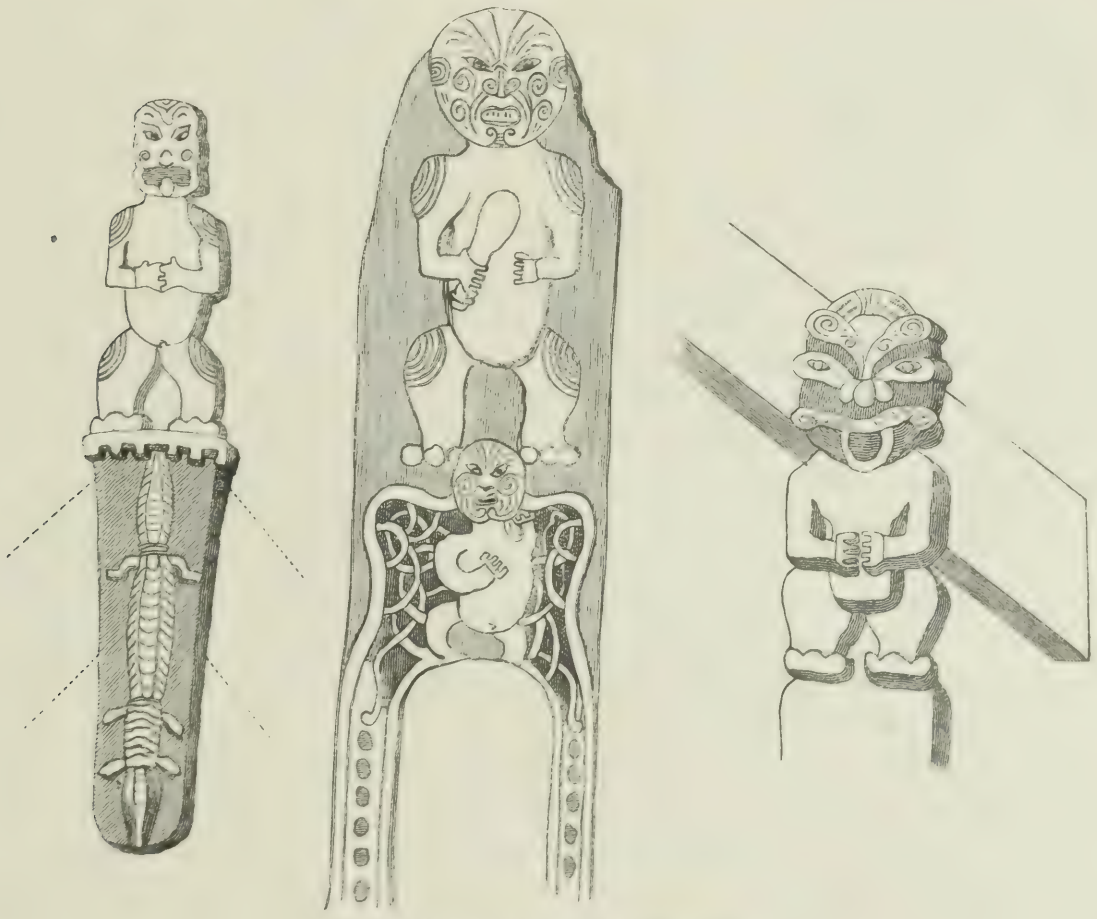


FIG. 118.—New Zealand house posts.

CHARMS AND FETICHES.

The use of objects as charms and fetiches is well known. Their graphic representation is not so well understood, although in the attempted interpretation of pictographs it is to be supposed that objects

of this character would be pictorially represented. The following is an instance where the use in action of a charm or fetich was certainly portrayed in a pictograph.

Figure 119, drawn by the Dakota Indians near Fort Snelling, Minnesota, exhibits the use for a fetichistic purpose of an instrument which is

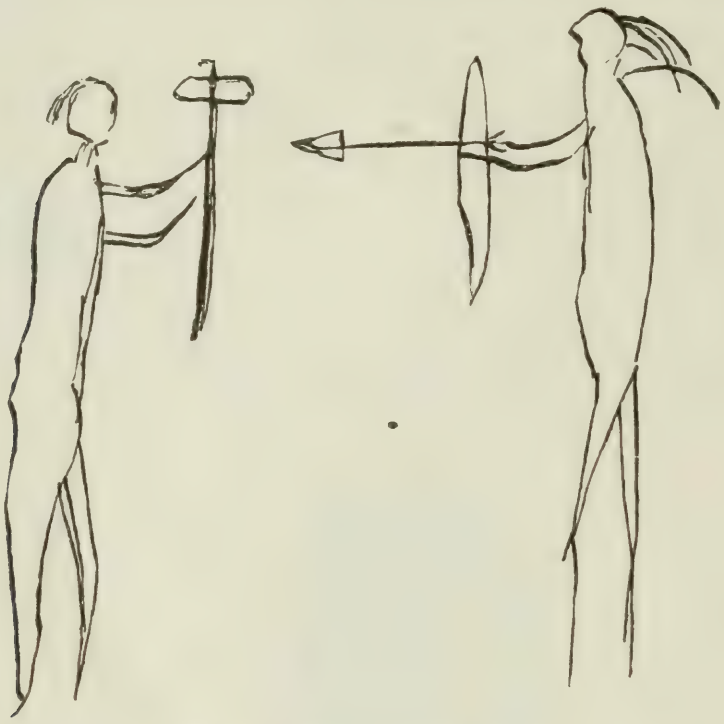


FIG. 119.—Mdewakantawan Fetich.

usually included among war clubs, though this particular object is more adapted to defense than to offense.

The head of the fetich is a grooved stone hammer of moderate size, measuring from an inch and a half to as much as 5 inches in length. A withe is tied about the middle of the hammer in the groove provided for the purpose, having a handle of from 2 to 4 feet in length. The latter is frequently wrapped with buckskin or raw-hide to strengthen it, as well as for ornamental purposes. Feathers attached bear mnemonic marks or designs, indicating marks of distinction, perhaps fetichistic devices not understood.

These objects are believed to possess the peculiar charm of warding off an enemy's missiles when held upright before the body. In the pictograph made by the Dakota Indian, the manner of holding it, as well as the act of shooting an arrow by an enemy, is shown with considerable clearness. The interpretation was explained by the draftsman himself.

Properties are attributed to this instrument similar to those of the small bags prepared by the Shaman, which are carried suspended from the neck by means of string or buckskin cords.

Subject-matter connected with this heading appears in several parts of this paper, *e. g.*, Figure 46, on page 141, and the characters for 1824–'25 on plate XLII.

CUSTOMS.

Pictographs in the writer's possession, to be classed under this very general heading, in addition to those that are more intimately connected with other headings, and therefore arranged in other parts of this paper, may be divided into those relating to Associations and those exhibiting details of daily life and habits.

ASSOCIATIONS.

It is well known that voluntary associations, generally of a religious character, have existed among the Indians, the members of which are designated by special paintings and marks entirely distinct from those relating to their clan-totems and name-totems. This topic requires too minute details to be entered upon in this paper after the space taken by other divisions. That it may become a feature in the interpretation of pictographs is shown by the following account:

Dr. W. J. Hoffman obtained a copy of drawings on a pipe-stem, which had been made and used by Ottawa Indians. Both of the flat surfaces bore incisions of figures, which are represented in Figure 120. On each side are four spaces, upon each of which are various characters, three spaces on one side being reserved for the delineation of human figures, each having diverging lines from the head upward, denoting their social status as chiefs or warriors and medicine-men.

Upon the space nearest the mouth is the drawing of a fire, the flames passing upward from the horizontal surface beneath them. The blue cross-bands are raised portions of the wood (ash) of which the pipe-stem is made; these show peculiarly shaped openings which pass entirely through the stem, though not interfering with the tube necessary for the passage of the smoke. This indicates considerable mechanical skill.

Upon each side of the stem are spaces corresponding in length and position to those upon the opposite side. In the lower space of the stem is a drawing of a bear, indicating that the two persons in the corresponding space on the opposite side belong to the Bear gens. The next upper figure is that of a beaver, showing the three human figures to belong to the Beaver gens, while the next to this, the eagle, indicates the opposite persons to be members of the Eagle gens. The upper figure is that of a lodge, the lodge containing a council fire, shown on the opposite side.

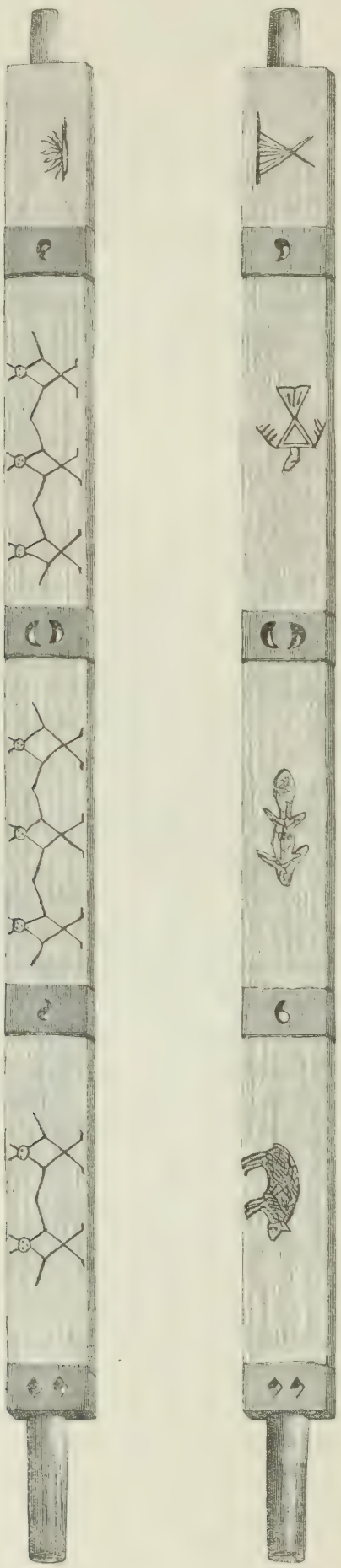


FIG. 120.—Ottawa pipe-stem.

The signification of the whole is that two members of the Bear gens, three members of the Beaver gens, and three members of the Eagle gens have united and constitute a society living in one lodge, around one fire, and smoke through the same pipe.

DAILY LIFE AND HABITS.

Examples of daily life and habits are given in Figures 121 and 122:

Figure 121 represents an Alaskan native in the water killing a walrus. The illustration was obtained from a slab of walrus ivory in the museum of the Alaska Commercial Company, of San Francisco, California, and interpreted by a native.

FIG. 121.—Walrus hunter. Alaska.

The carving, Figure 122, made of a piece of walrus tusk, was copied from the original in the museum of the Alaska Commercial Company, San Francisco, California, during the summer of 1882. Interpretations were verified by Naumoff, a Kadiak half-breed, in San Francisco at the time. The special purport of some of the characters and etchings is not apparent.

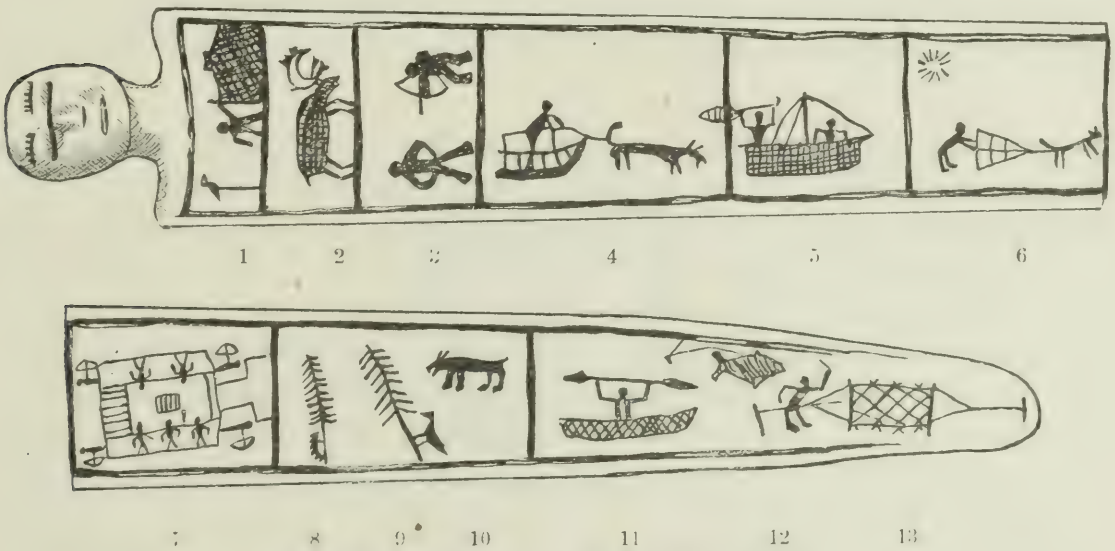


FIG. 122.—Ivory carving with records. Alaska.

In No. 1 is a native whose left hand is resting against the house, while the right hangs toward the ground. The character to his right represents a "Shaman stick" surmounted by the emblem of a bird, a "good spirit," in memory of some departed friend. It was suggested that the grave stick had been erected to the memory of his wife.

No. 2. Represents a reindeer, but the special import in this drawing is unknown.

No. 3. Signifies that one man, the recorder, shot and killed another with an arrow.

No. 4. Denotes that the narrator has made trading expeditions with a dog-sledge.

No. 5. Is a sail-boat, although the elevated paddle signifies that that was the manner in which the voyage was best made.

No. 6. A dog-sled, with the animal hitched up for a journey. The radiating lines in the upper left hand corner, over the head of the man, is a representation of the sun.

No. 7. A sacred lodge. The four figures at the outer corners of the square represent the young men placed on guard, armed with bows and arrows, to keep away those not members of the band, who are depicted as holding a dance. The small square in the center of the lodge represents the fire-place. The angular lines extending from the right side of the lodge to the vertical partition line are an outline of the subterranean entrance to the lodge.

No. 8. A pine tree, upon which a porcupine is crawling upward.

No. 9. A pine tree, from which a bird (woodpecker) is extracting larvæ for food.

No. 10. A bear.

No. 11. The recorder in his boat, holding aloft his double-bladed paddle to drive fish into a net.

No. 12. An assistant fisherman driving fish into the net.

No. 13. The net.

The figure over the man (No. 12) represents a whale, with harpoon and line attached, caught by the narrator.

It will be understood that all personal customs, such, for instance, as the peculiar arrangement of hair in any tribe, are embodied in their pictorial designation by other tribes and perhaps by themselves. See in this connection, page 230.

Among the many customs susceptible of graphic portrayal which do not happen to be illustrated in this paper, an example may be given in the mode in several tribes (*e. g.*, Apache, Muskoki, Dakota and Miztec, of punishing the infidelity of wives, namely, by cutting off the nose. The picture of a noseless woman would, therefore, when made by those tribes, have distinct meaning. The unfaithful wife mentioned on page 134 is drawn with a nose, but in her case the greater punishment of death was inflicted.

TRIBAL HISTORY.

It is very difficult, if not impossible, to distinguish in pictographs, or, indeed, orally, between historical and traditional accounts obtained from Indians, so that this heading may be connected with one before presented, having relation to Traditions as mnemonically pictured. See page 84.

The Walum-Olum, or Bark Record of the Lenni-Lenapè, before mentioned, as also some of Schoolcraft's pictographic illustrations, may be, in accordance with the judgment of the reader, more or less properly connected with history. The Dakota Winter Counts, including the Corbusier Winter Counts, in the present paper, while having their chief value as calendars, contain some material that is absolute and veritable tribal history, though seldom of more than local and transient interest. An example from Battiste Good's count for the year 1862–'63, is given in addition, explaining the origin of the title "Brulé" Dakota.

He calls the year "The-people-were-burnt winter," and adds:

They were living somewhere east of their present country, when a prairie fire destroyed their entire village. Many of their children and

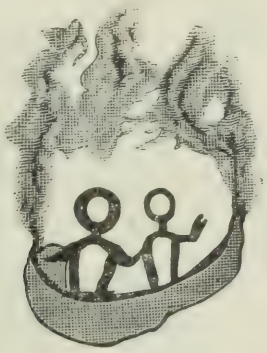


FIG. 123.—Origin of Brulé. Dakota.

a man and his wife, who were on foot some distance away from the village, were burned to death. Many of their horses were also burned to death. All the people that could get to a long lake which was near by saved themselves by jumping into it. Many of these were badly burned about the thighs and legs, and this circumstance gave rise to the name, *si-can-gu*, translated as Burnt Thigh, and Brulé, by which they have since been known. Battiste Good's character for the year is here given as Figure 123.

This is of later date than the mythical times, even among Indians, and, being verified as it is, must be accepted as historical.

BIOGRAPHIC.

The pictographs under this head that have come to the writer's notice have been grouped as, *First*, a continuous account of the chief events in the life of the subject of the sketch; *Second*, separate accounts of some particular exploit or event in the life of the person referred to. Pictographs of both of these descriptions are very common.

CONTINUOUS RECORD OF EVENTS IN LIFE.

An example of a continuous record is the following "autobiography" of Running-Antelope:

The accompanying illustrations, Figures 124 to 134 are copied from a record of eleven drawings prepared by Running-Antelope, chief of the

FIG. 124.—Killed an Arikara.

Uncpapa Dakota, at Grand River, Dakota, in 1873. The sketches were painted in a large drawing-book by means of water colors, and were made for Dr. W. J. Hoffman, to whom the following interpretations were given by the artist:

The record comprises the most important events in the life of Running-Antelope as a warrior. Although frequently more than one per-

son is represented as slain, it is not to be inferred that all were killed in one day, but during the duration of one expedition, of which the recorder was a member or chief. The bird (*Falco cooperi?*) upon the shield

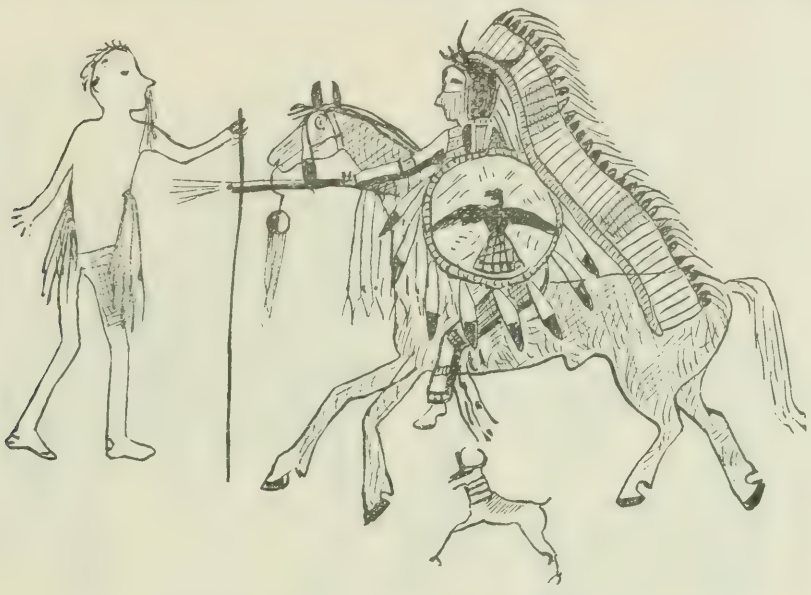


FIG. 125.—Shot and scalped an Arikara.

refers to the clan or band totem, while the antelope drawn beneath the horses, in the act of running, signifies the personal name.

Figure 124. Killed two Arikara Indians in one day. The lance held in the hand, thrusting at the foremost of the enemy, signifies that he

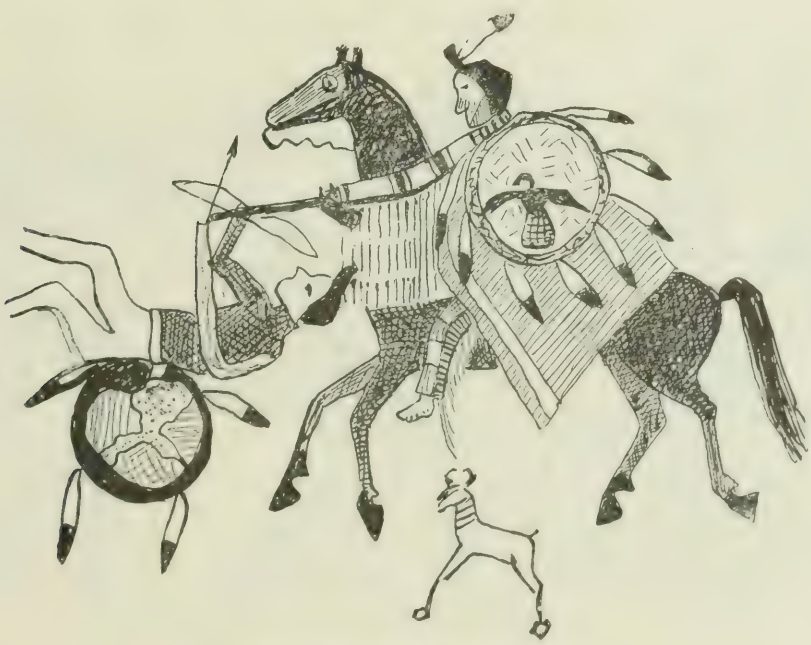


FIG. 126.—Shot an Arikara.

killed the person with that weapon; the left-hand figure was shot, as is shown, by the discharging gun, and afterwards struck with the lance. This occurred in 1853.

Figure 125. Shot and scalped an Arikara Indian in 1853. It appears that the Arikara attempted to inform Running-Antelope of his being unarmed, as the right hand is thrown outward with distended fingers, in imitation of making the gesture for *negation, having nothing.*

FIG. 127.—Killed two warriors.

Figure 126. Shot and killed an Arikara in 1853.
Figure 127. Killed two warriors on one day in 1854.

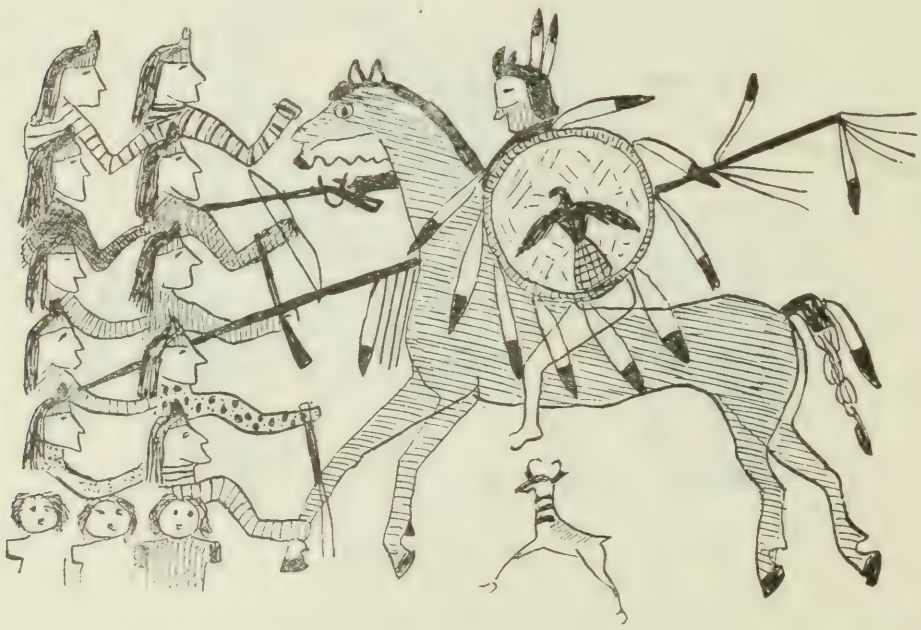


FIG. 128.—Killed ten men and three women.

Figure 128. Killed ten men and three squaws in 1856. The grouping of persons strongly resembles the ancient Egyptian method of drawing.

Figure 129. Killed two Arikara chiefs in 1856. Their rank is shown by the appendages to the sleeves, which consist of white weasel skins. The arrow in the left thigh of the recorder shows that he was wounded. The

FIG. 129.—Killed two chiefs.

scars are still distinct upon the person of Running-Antelope, showing that the arrow passed through the thigh.

FIG. 130.—Killed one Arikara.

Figure 130. Killed one Arikara in 1857. Striking the enemy with a bow is considered the greatest insult that can be offered to another.

The act of so doing also entitles the warrior to count one *coup* when relating his exploits in the council chamber.

Figure 131. Killed an Arikara in 1859 and captured a horse.

FIG. 131.—Killed one Arikara.

Figure 132. Killed two Arikara hunters in 1859. Both were shot, as is indicated by the figure of a gun in contact with each Indian. The cluster of lines drawn across the body of each victim represents the

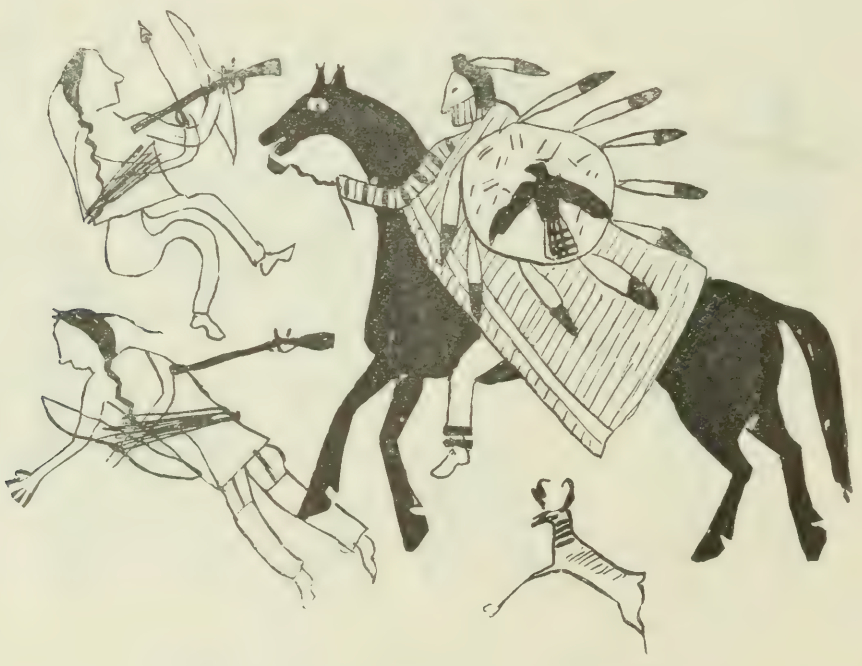


FIG. 132.—Killed two Arikara hunters.

discharge of the gun, and shows where the ball took effect. The upper one of the two figures was in the act of shooting an arrow when he was killed.

Figure 133. Killed five Arikara in one day in 1863. The dotted line indicates the trail which Running-Antelope followed, and when the Indians discovered that they were pursued, they took shelter in an iso-

FIG. 133.—Killed five Arikara.

lated copse of shrubbery, where they were killed at leisure. The five guns within the inclosure represent the five persons armed.

Figure 134. An Arikara killed in 1865.

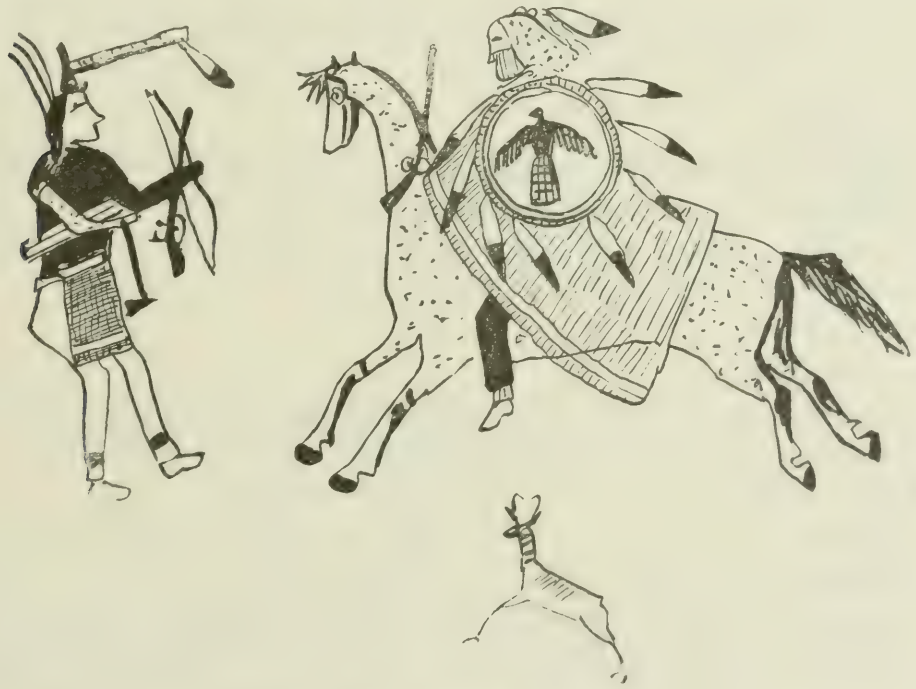


FIG. 134.—Killed an Arikara.

The Arikara are delineated in the above, in nearly all instances, wearing the top-knot of hair, a custom similar to that practiced by the Absa-

roka, though as the latter were the most inveterate enemies of the Sioux, and as the word Palláni for Arikara is applied to all enemies, the Crow custom may have been depicted as a generic mark. The practice of painting the forehead red, also an Absaroka custom, serves to distinguish the pictures as individuals of one of the two tribes.

PARTICULAR EXPLOITS AND EVENTS.

A record on ivory shown as Figure 135, was obtained by Dr. W. J. Hoffman in San Francisco, California, in 1882, and was interpreted to him by an Alaskan native. The story represents the success of a hunt; the animals desired are shown, as well as those which were secured.

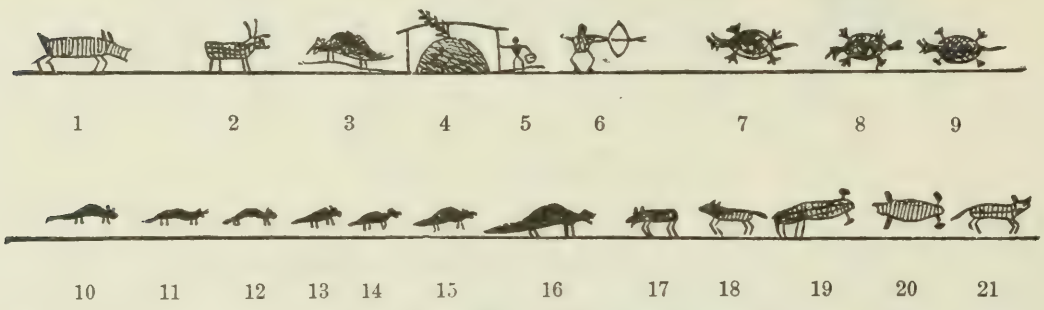


FIG. 135.—Record of hunt. Alaska.

The following is the explanation of the characters:

1, 2. Deer.

3. Porcupine.

4. Winter, or permanent, habitation. The cross-piece resting upon two vertical poles constitutes the rack, used for drying fish.

5. One of the natives occupying the same lodge with the recorder.

6. The hunter whose exploits are narrated.

7, 8, 9. Beavers.

10–14. Martens.

15. A weasel, according to the interpretation, although there are no specific characters to identify it as different from the preceding.

16. Land otter.
17. A bear.
18. A fox.
19. A walrus.
20. A seal.
21. A wolf.

By reference to the illustration it will be observed that all the animals secured are turned toward the house of the speaker, while the heads of those animals desired, but not captured, are turned away from it.

The following is the text in the Kiatexamut dialect of the Innuit lan-

guage as dictated by the Alaskan, with his own literal translation into English :

Huí-nu-ná-ga huí-pu-qtú-a pi-cú-qu-lú-a mus′-qu-lí-qnut. Pa-mú-qtu-līt′
I, (from) my place. (settlement.) I went hunting (for) skins. (animals) martens

ta-qí-mĕn, a-mí-da-duk′ a-xla-luk′, á-qui-á-muk pi-qú-a a-xla-luk′ ; ku-qú-
five, weasel one, land otter caught one ;

lu-hú-nu-mŭk′ a-xla-luk′, tun′-du-muk tú-gu-qlí-u-gú me-lú-ga-nuk′, pé luk
wolf one, deer (I) killed two, beaver

pi-naí-u-nuk, nú-nuk pit′-qu-ní, ma-klak-muk′ pit′-qu-ní, a-cí-a-na-muk
three, porcupine (I) caught none, seal (I) caught none, walrus

pit′-qu-ni, ua-qí-la-muk pit′-qu-ní, ta-gú-xa-muk pit′-qu-ní.
(I) caught none, fox (I) caught none, bear (I) caught none.

The following narrative of personal exploit was given to Dr. W. J. Hoffman by "Pete," a Shoshoni chief, during a visit of the latter to Washington, in 1880. The sketch, Figure 136, was drawn by the narrator, and the following explanation of characters will be sufficient interpretation to render the figures intelligible.

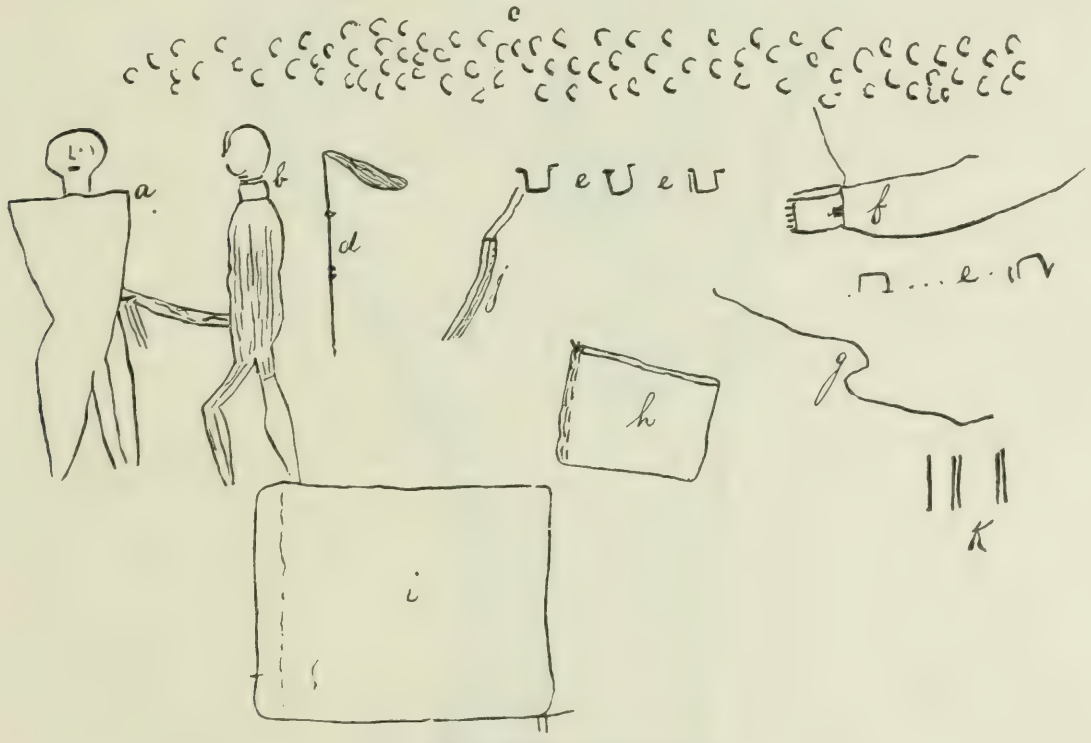


FIG. 136.—Shoshoni horse raid.

a. Pete, a Shoshoni chief.

b. A Nez Percés Indian, one of the party from whom the horses were stampeded, and who wounded Pete in the side with an arrow.

c. Hoof marks, showing course of stampede.

d. Lance, which was captured from the Nez Percés.

e, *e*, *e*. Saddles captured.

f. Bridle captured.

g. Lariat captured.

h. Saddle-blanket captured.

i. Body-blanket captured.
j. Pair of leggings captured.
k. Three single legs of leggings captured.

Figure 137, copied from Schoolcraft, IV, p. 253, Pl. 32, is taken from the shoulder-blade of a buffalo, found on the plains in the Comanche country of Texas. No. 5 is a symbol showing the strife for the buffalo existing between the Indian and white races. The Indian (1), presented on

FIG. 137.—Comanche drawing on shoulder-blade.

horseback, protected by his ornamented shield and armed with a lance, kills a Spaniard (3), the latter being armed with a gun, after a circuitous chase (6). His companion (4), armed with a lance, shares the same fate.

Figure 138 is taken from the winter count of Battiste Good for the year 1853–'54.

He calls the year Cross-Bear-died-on-the-hunt winter.

The "travail" means, they moved; the buffalo, to hunt buffalo; the bear with mouth open and paw advanced, cross-bear. The involute character frequently repeated in Battiste's record signifies pain in the stomach and intestines, resulting in death. In this group of characters there is not only the brief story, an obituary notice, but an ideographic mark for a particular kind of death, a noticeable name-totem, and a presentation of the Indian mode of transportation.

FIG. 138.—Cross-Bear's death.

The word "travail" appearing above, as given by the interpreter, requires explanation. It refers to the peculiar sledge which is used by many tribes of Indians for the purpose of transportation. It is used on the surface of the ground when not covered with snow, even more than when snow prevails. The word is more generally found in print in the plural, where it is spelled "travaux" and sometimes "travois."

The etymology of this word, which has not yet been found in any Indian language, has been the subject of considerable discussion. The present writer considers it to be one of the class of words which descended in corrupted form from the language of the Canadian voyageurs, and that it was originally the French word "traineau," with its meaning of sledge.

Figure 139 is taken from a roll of birch bark obtained from the Ojibwa Indians at Red Lake, Minnesota, in 1882, known to be more than seventy years old. The interpretation was given by an Indian from that reservation, although he did not know the author nor the history of the record. With one exception, all of the characters were understood and interpreted to Dr. Hoffman, in 1883 by Ottawa Indians at Harbor Springs, Michigan. This tribe at one time habitually used similar methods of recording historic and mythologic data.

No. 1. Represents the person who visited a country supposed to have been near one of the great lakes. He has a scalp in his hand which he obtained from the head of an enemy, after having killed him. The line from the head to the small circle denotes the name of the person, and the line from the mouth to the same circle signifies (in the Dakota method), "That is it," having reference to proper names.

No. 2. The person killed. He was a man who held a position of some consequence in his tribe, as is indicated by the horns, marks used by the Ojibwas among themselves for Shaman, Wabeno, etc. It has been suggested that the object held in the hand of this figure is a rattle, though the Indians, to whom the record was submitted for examination, are in doubt, the character being indistinct.

No. 3. Three disks connected by short lines signify, in the present instance, three nights, *i. e.*, three black suns. Three days from home

was the distance the person in No. 1 traveled to reach the country for which started.

No. 4. Represents a shell, and denotes the primary object of the journey. Shells were needed for making ornaments and to trade.

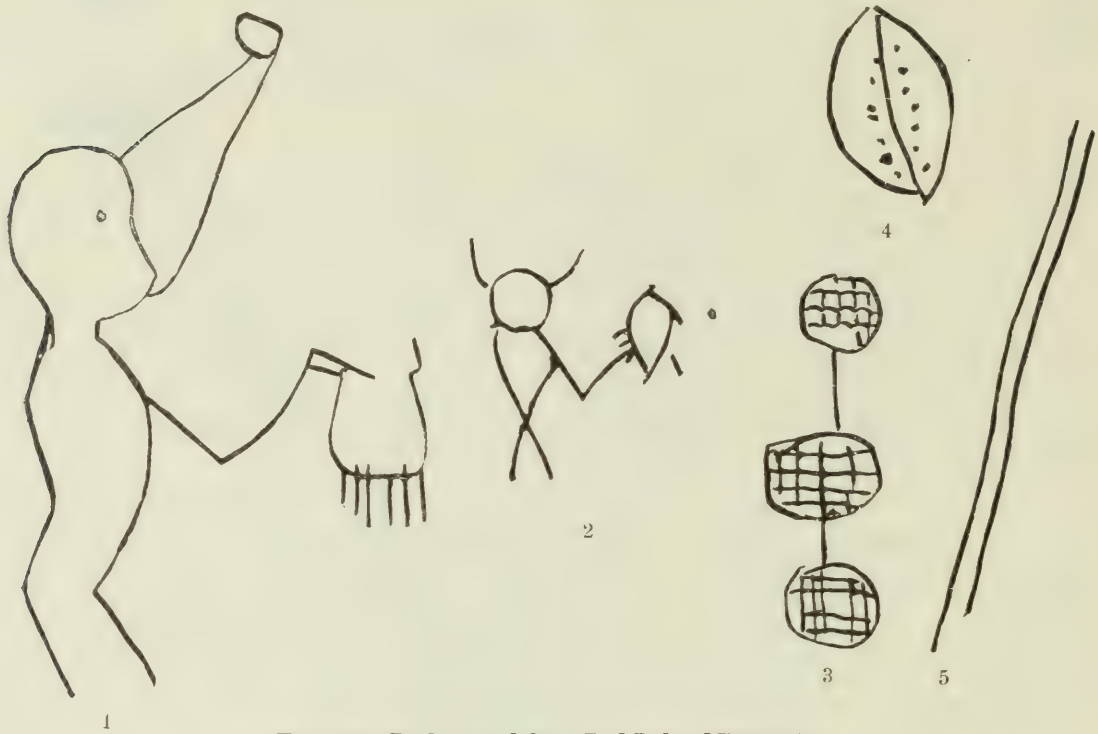


FIG. 139.—Bark record from Red Lake, Minnesota.

No. 5. Two parallel lines are here inserted to mark the end of the present record and the beginning of another.

IDEOGRAPHS.

The number of instances in this paper in which the picture has been expressive of an idea, and not a mere portraiture of an object, and has amounted sometimes to a graphic representation of an abstract idea, is so great as to render cross-references superfluous. As examples, attention may be invited to Figure 72, page 166, for the idea of "voice," Figure 179, page 241, for that of "war," and the Corbusier winter counts for the year 1876–'77—No. I, page 146, for that of "support." In addition to them, however, for convenience of grouping under this special heading, the following illustrations (some of which would as properly appear under the head of Conventionalizing) are presented.

ABSTRACT IDEAS.

Figure 140 is taken from the winter count of Battiste Good, and is drawn to represent the sign for pipe, which it is intended to signify. The sign is made by placing the right hand near the upper portion of the breast, the left farther forward, and both held so that the index and thumb approximate a circle, as if holding a pipe-stem. The remaining fingers are closed.

FIG. 140.—Sign for pipe. Dakota.

The point of interest in this character is that instead of drawing a pipe the artist drew a human figure making the sign for pipe, showing the intimate connection between gesture-signs and pictographs. The pipe, in this instance, was the symbol of peace.

Figure 141, taken from the winter count of Battiste Good for the year 1703–'04, signifies plenty of buffalo meat.

The forked stick being one of the supports of a drying-pole or scaffold, indicates meat. The circle may represent a pit or "cache" in which buffalo meat was placed during the winter of 1703–'04, or it may mean "heap"—*i. e.*, large quantity, buffalo having been very plentiful that year. The buffalo head denotes the kind of meat stored. This is an abbreviated form of the device immediately following, and being fully understood affords a suggestive comparison with some Egyptian hieroglyphs and Chinese letters, both in their full pictographic origin and in their abbreviation.

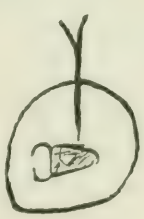


FIG. 141.—Plenty Buffalo meat. Dakota.

Figure 142 is taken from the same count for the year 1745–'46, in which the drying-pole is supported by two forked sticks or poles, only one of which, without the drying-pole, was indicated in the preceding figure, which is an abbreviated or conventionalized form of the objective representation in the present figure, viz., a scaffold or pole upon which buffalo meat was placed for drying. Buffalo were very plentiful during the winter of 1745–'46, and the kind of meat is denoted by the buffalo head placed above the pole, from which meat appears suspended.

FIG. 142.—Plenty Buffalo meat. Dakota.

Figure 143 is taken from Prince Maximilian's Travels, *op. cit.* p. 352. The cross signifies, I will barter or trade. Three animals are drawn on the right hand of the cross; one is a buffalo (probably albino); the two others, a weasel (*Mustela Canadensis*) and an otter. The pictographer

FIG. 143.—Pictograph for trade. Dakota.

offers in exchange for the skins of these animals the articles which he has drawn on the left side of the cross. He has there, in the first place, depicted a beaver very plainly, behind which there is a gun; to the left of the beaver are thirty strokes, each ten separated by a longer line; this means: I will give thirty beaver skins and a gun for the skins of the three animals on the right hand of the cross.

FIG. 144.—Starvation. Dakota.

The ideographic character of the design consists in the use of the cross—being a drawing of the gesture-sign for "trade"—the arms being in position interchanged. Of the two things each one is put in the place before occupied by the other thing—the idea of exchange.

Figure 144, from the record of Battiste Good for the year 1720–'21, signifies starvation, denoted by the bare ribs.

This design survives among the Ottawa and Pottawatomi Indians of Northern Michigan, but among the latter a single line only is drawn across the breast, shown in Figure 145. This corresponds, also, with one of the gesture-signs for the same idea.

Figure 146, from the record of Battiste Good for the year 1826–'27, signifies "pain." He calls the year "Ate-a-whistle-and-died winter," and explains that six Dakotas, on the war path, had nearly perished with hunger when they found and ate the rotting carcass of an old buffalo, on which the wolves had been feeding. They were seized soon after with

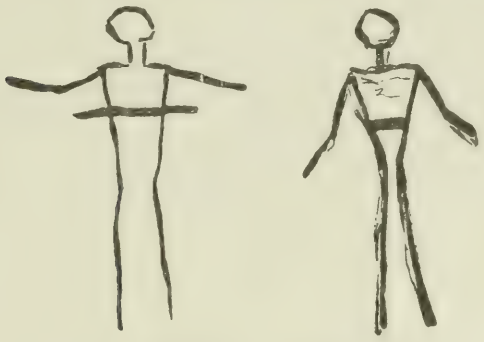


FIG. 145.—Starvation. Ottawa and Pottawatomi.

FIG. 146.—Pain. Died of "whistle." Dakota.

pains in the stomach, their bellies swelled, and gas poured from the mouth and the anus, and they died of a whistle, or from eating a whistle. The sound of gas escaping from the mouth is illustrated in the figure. The character on the abdomen and on its right may be considered to be the ideograph for pain in that part of the body.

SYMBOLISM.

The writer has, in a former publication, suggested the distinction to be made between a pictorial sign, an emblem, and a symbol; but it is not easy to preserve the discrimination in reference to ideographic characters which have often become conventionalized. To partly express the distinction, nearly all of the characters in the Dakota Winter Counts are regarded as pictorial signs, and the class represented by tribal signs, personal insignia, etc., is considered to belong to the category of emblems. There is no doubt, however, that true symbols exist among the Indians, as they must exist to some extent among all peoples not devoid of poetic imagination. Some of them are shown in this paper. The pipe is generally a symbol of peace, although in certain positions and connections it sometimes signifies preparation for war, and again subsequent victory. The hatchet is a common symbol for war, and closed hands or approaching palms denote friendship. The tortoise has been clearly used as a symbol for land, and many other examples can be admitted. If Schoolcraft is to be taken as uncontroverted authority, the symbolism of the Ojibwa rivalled that of the Egyptians, and the recent unpublished accounts of the Zuñi, Moki, and Navajo before mentioned indicate the frequent employment of symbolic devices by those tribes which are notably devoted to mystic ceremonies. Nevertheless,

the writer's personal experience is, that often when he has at first supposed a character to be a genuine symbol it has resulted, with better means of understanding, in being not even an ideograph but a mere objective representation. In this connection, the remarks on the circle on page 107, and those on Figure 206, on page 246, may be in point.

Another case for consideration occurs. The impression, real or represented, of a human hand is used in several regions in the world with symbolic significance. For instance, in Jerusalem a rough representation of a hand is reported by Lieutenant Conder (Palestine Exploration Fund, January, 1873, p. 16) to be marked on the wall of every house whilst in building by the native races. Some authorities connect it with the five names of God, and it is generally considered to avert the evil eye. The Moors generally, and especially the Arabs in Kairwan, employ the marks on their houses as prophylactics. Similar hand prints are found in the ruins of El Baird, near Petra. Some of the quaint symbolism connected with horns is supposed to originate from such hand marks. Among the North American Indians the mark so readily applied is of frequent occurrence, an instance, with its ascertained significance, being given on page 187, *supra*.

It has been recently ascertained that the figure of a hand, with extended fingers, is very common in the vicinity of ruins in Arizona as a rock-etching, and is also frequently seen daubed on the rocks with colored pigments or white clay. This coincidence would seem at first to assure symbolic significance and possibly to connect the symbolism of the two hemispheres. But Mr. Thomas V. Keam explains the Arizona etchings of hands, on the authority of the living Moki, as follows:

"These are vestiges of the test formerly practiced among young men who aspired for admission to the fraternity of Salyko. The Salyko is a trinity of two women and a woman from whom the Hopitus [Moki] first obtained corn. Only those were chosen as novices, the imprints of whose hands had dried on the instant."

While the subject-matter is, therefore, ceremonial, there is absolutely no symbolism connected with it. The etchings either simply perpetuate the marks made in the several tests or imitate them.

In the present stage of the study no more can be suggested than that symbolic interpretations should be accepted with caution.

With regard to the symbolic use of material objects, which would probably be extended into graphic portrayal, the following remarks may be given:

The Prince of Wied mentions (*op. cit.*, Vol. I, p. 244) that in the Sac and Fox tribes the rattle of a rattlesnake attached to the end of the feather worn on the head signifies a good horse stealer. The stealthy approach of the serpent, accompanied with latent power, is here clearly indicated.

Mr. Schoolcraft says of the Dakotas that "some of the chiefs had the skins of skunks tied to their heels to symbolize that they never ran, as

that animal is noted for its slow and self-possessed movements." See Personal Memoirs of a Residence of Thirty Years with the Indian Tribes on the American Frontier, etc., Philadelphia, 1851, p. 214.

This is one of the many customs to be remembered in the attempted interpretations of pictographs. The present writer does not know that a skunk skin, or a strip of skin which might be supposed to be a skunk skin, attached to a human heel, has ever been used pictorially as the ideograph of courage or steadfastness, but with the knowledge of this objective use of the skins, if they were found so represented pictorially, as might well be expected, the interpretation would be suggested, without any direct explanation from Indians.

IDENTIFICATION OF THE PICTOGRAPHERS.

The first point in the examination of a pictograph is to determine by what body of people it was made. This is not only because the marks or devices made by the artists of one tribe, or perhaps of one linguistic stock if not disintegrated into separated divisions distant from each other, may have a different significance from figures virtually the same

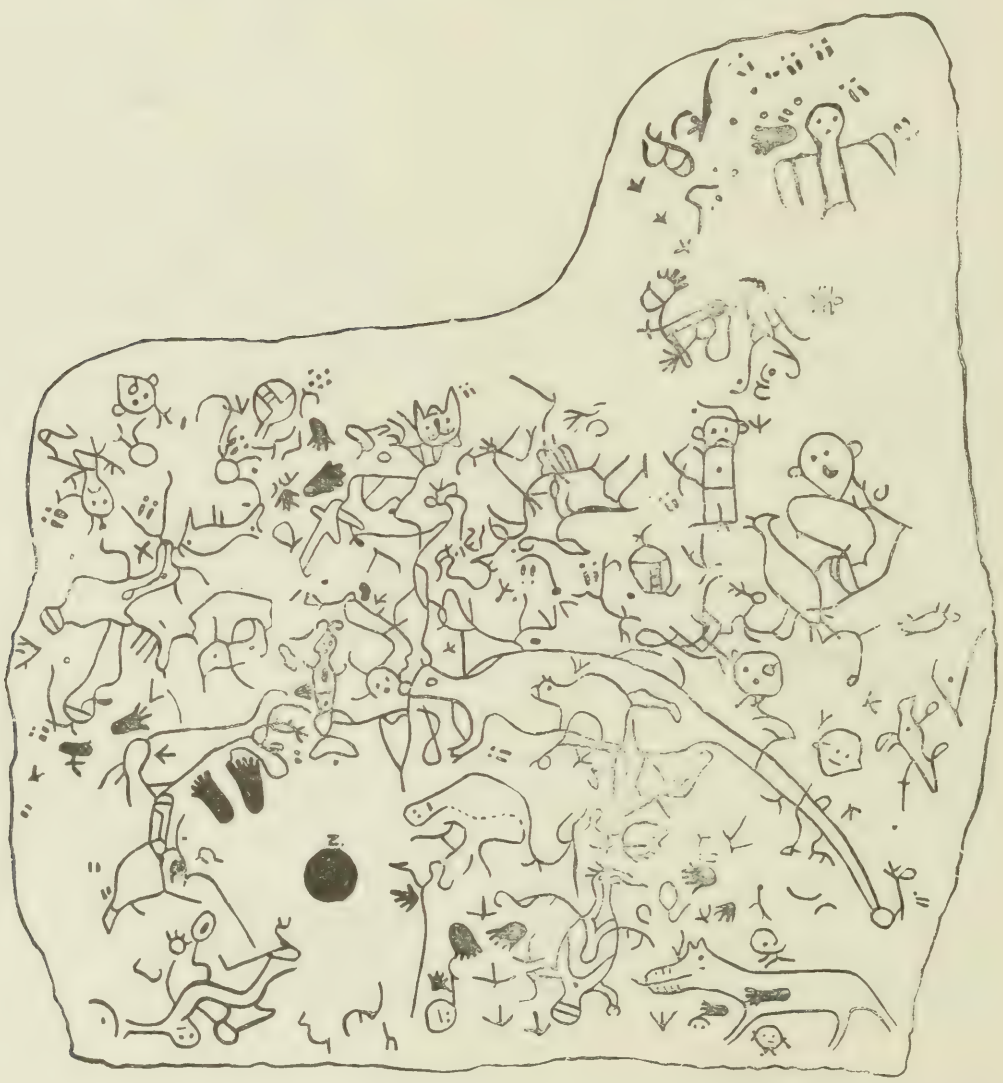


FIG. 147.—Algonkian petroglyph. Millsborough, Pennsylvania.

produced by another tribe or stock, but because the value of the record is greatly enhanced when the recorders are known. In arriving at the identification mentioned it is advisable to study: 1st. The general style or type. 2d. The presence of characteristic objects. 3d. The apparent

subject-matter. 4th. The localities with reference to the known habitat of tribes.

GENERAL STYLE OR TYPE.

Although the collection of pictographs, particularly of petroglyphs, is not complete, and their study, therefore, is only commenced, it is possible to present some of the varieties in general style and type.

Figure 147 is presented as a type of the Eastern Algonkian pictographs. It was copied by Messrs. J. Sutton Wall and William Arison, in 1882, from a rock opposite Millsborough, in Fayette County, Pennsylvania, and is mentioned on page 20, *supra*, in connection with the local distribution of petroglyphs. The locality is within the area once occupied by the tribes of the Algonkian linguistic family, and there is apparent a general similarity to the well-known Dighton Rock inscription.

Mr. J. Sutton Wall, of Monongahela City, Pennsylvania, who has kindly furnished the drawing of the etchings, states that the outlines of figures are formed by grooves carved or cut in the rock from an inch to a mere trace in depth. The footprints are carved depressions. The character marked Z (near the lower left-hand corner) is a circular cavity 7 inches deep. The rock is sandstone, of the Waynesburg series.

Mr. Wall has also contributed a copy of the "Hamilton Picture Rock,"

FIG. 148.—Algonkian petroglyph. Hamilton Farm, West Virginia.

of which Figure 148 is an illustration. The etchings are on a sandstone rock, on the Hamilton farm, 6 miles southeast from Morgantown, West Virginia. The turnpike passes over the south edge of the rock.

Mr. Wall furnishes the following interpretation of the figures:

A. Outline of a turkey.

B. Outline of a panther.

C. Outline of a rattlesnake.

D. Outline of a human form.

E. A "spiral or volute."

F. Impression of a horse foot.

G. Impression of a human foot.

H. Outline of the top portion of a tree or branch.

I. Impression of a human hand.

J. Impression of a bear's forefoot, but lacks the proper number of toe marks.

K. Impression of two turkey tracks.

L. Has some appearance of a hare or rabbit, but lacks the corresponding length of ears.

M. Impression of a bear's hindfoot, but lacks the proper number of toe marks.

N. Outline of infant human form, with two arrows in the right hand.

O, P. Two cup-shaped depressions.

Q. Outline of the hind part of an animal.

R. Might be taken to represent the impression of a horse's foot were it not for the line bisecting the outer curved line.

S. Represent buffalo and deer tracks.

The turkey A, the rattlesnake C, the rabbit L, and the "footprints" J, M, and Q, are specially noticeable as typical characters in Algonkian pictography.

Mr. P. W. Sheafer furnishes in his Historical Map of Pennsylvania,

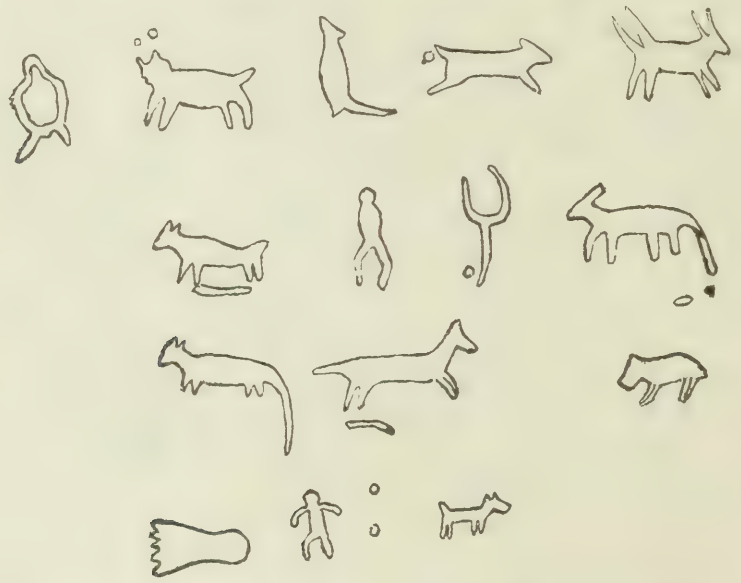


FIG. 149.— Algonkian petroglyph. Safe Harbor, Pennsylvania.

Philadelphia, 1875, a sketch of a pictograph on the Susquehanna River, Pennsylvania, below the dam at Safe Harbor, part of which is repro-

duced in Figure 149. This appears to be purely Algonkian, and has more resemblance to Ojibwa characters than any other petroglyph yet noted from the Eastern United States.

The best type of Western Algonkian petroglyphs known to the writer is reported as discovered by members of the party of Capt. William A. Jones, United States Army, in 1873, and published in his report on Northwestern Wyoming, including the Yellowstone National Park, Washington, 1875, p. 267, *et seq.*, Fig. 50, reproduced in this paper by

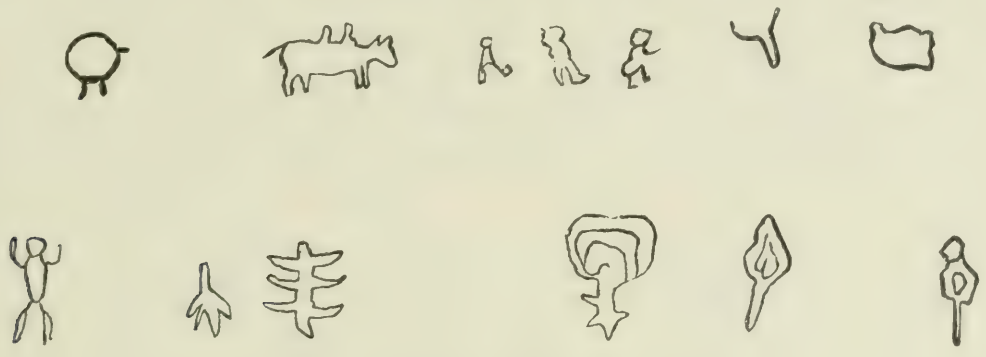


FIG. 150.—Algonkian petroglyph. Wyoming.

Figure 150, in which the greater number of the characters are shown about one-fifth of their size.

An abstract of his description is as follows:

* * Upon a nearly vertical wall of the yellow sandstones just back of Murphy's ranch, a number of rude figures had been chiseled, apparently at a period not very recent, as they had become much worn. * * * No certain clue to the connected meaning of this record was obtained, although Pínatsi attempted to explain it when the sketch was shown to him some days later by Mr. F. W. Bond, who copied the inscriptions from the rocks. The figure on the left, in the upper row, somewhat resembles the design commonly used to represent a shield, with the greater part of the ornamental fringe omitted, perhaps worn away in the inscription. We shall possibly be justified in regarding the whole as an attempt to record the particulars of a fight or battle which once occurred in this neighborhood. Pínatsi's remarks conveyed the idea to Mr. Bond that he understood the figure [the second in the upper line] to signify cavalry, and the six figures [three in the middle of the upper line, as also the three to the left of the lower line,] to mean infantry, but he did not appear to recognize the hieroglyphs as the copy of any record with which he was familiar.

Several years ago Dr. W. J. Hoffman showed these (as well as other pictographs from the same locality) to several prominent Shoshoni Indians from near that locality, who at once pronounced them the work of the Pawkees (Satsika, or Blackfeet), who formerly occupied that country. The general resemblance of many of the drawings from this area of country is similar to many of the Eastern Algonkin records. The Satsika are part of the great Algonkian stock.

Throughout the Wind River country of Wyoming many pictographic records have been found, and others reported by the Shoshoni Indians. These are said, by the latter, to be the work of the "Pawkees," as they call the Blackfeet, or more properly Satsika, and the general style of

many of the figures bears strong resemblance to similar carvings found in the eastern portion of the United States, in regions known to have been occupied by other tribes of the same linguistic stock, viz., the Algonkian.

The four specimens of Algonkian petroglyphs presented above in Figures 147–150 show gradations in type. In connection with them reference may be made to the Ojibwa bark record, Figure 139, page 218; the Ojibwa grave-posts, Plate LXXXIII; the Ottawa pipe-stem, Figure 120, page 204, in this paper; and to Schoolcraft's numerous Ojibwa pictographs; and they may be contrasted with the many Dakota and Innuit drawings in this paper.

Mr. G. K. Gilbert has furnished a small collection of drawings of Shoshonian petroglyphs, from Oneida, Idaho, shown in Figure 151. Some of

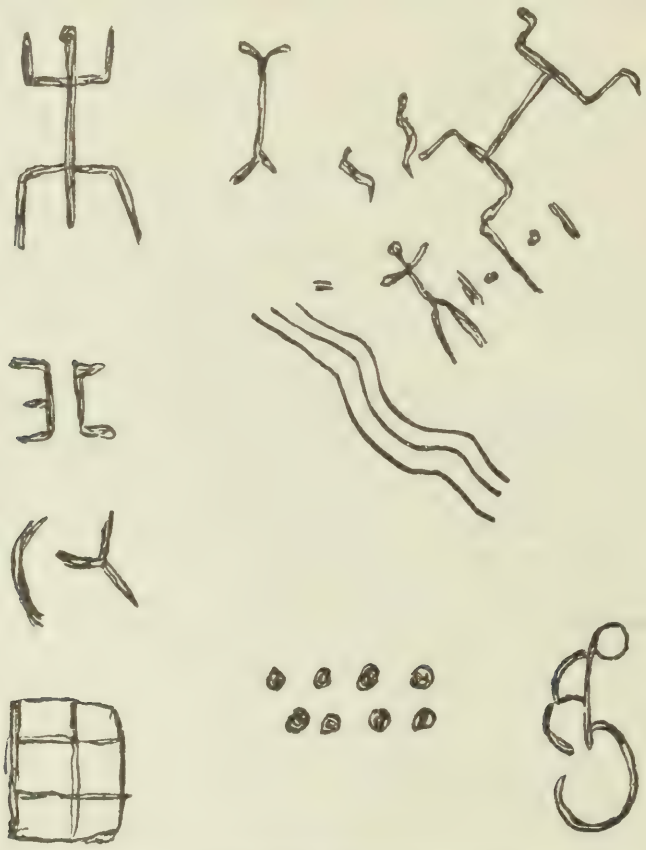


FIG. 151.—Shoshonian petroglyph. Idaho.

them appear to be totemic characters, and to record the names of visitors to the locality.

Five miles northwest from this locality, and one-half mile east from Marsh Creek, is another group of characters, on basalt bowlders, apparently totemic, and by Shoshoni. A copy of these, also contributed by Mr. Gilbert, is given in Figure 152.

All of these drawings resemble the petroglyphs found at Partridge Creek, northern Arizona, and in Temple Creek Cañon, southeastern Utah, mentioned *ante*, pages 30 and 26 respectively.

Mr. I. C. Russell, of the United States Geological Survey, has furnished drawings of rude pictographs at Black Rock Spring, Utah, represented in Figure 153. Some of the other characters not represented in the figure consist of several horizontal lines, placed one above another, above which are a number of spots, the whole appearing like a numerical record having reference to the figure alongside, which resembles, to a slight extent, a melon with tortuous vines and stems. The left-hand upper figure suggests the masks shown on Plate LXXXI.

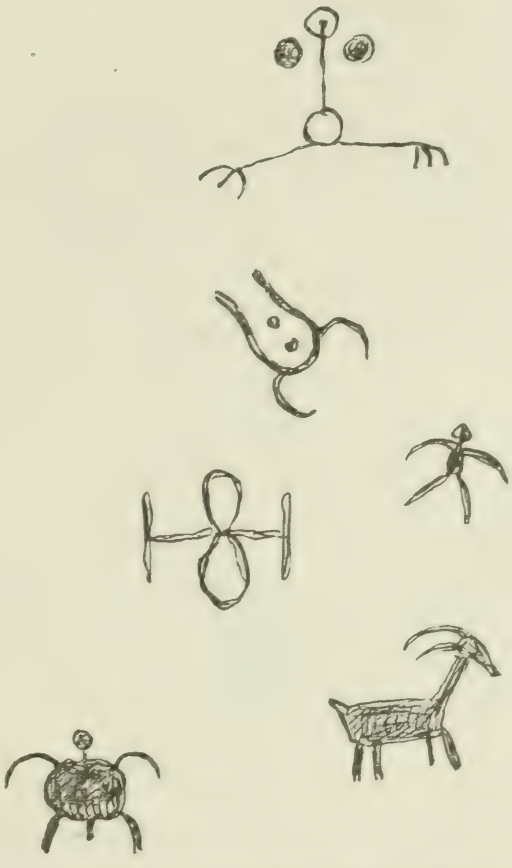


FIG. 152.—Shoshonian petroglyph. Idaho.

Mr. Gilbert Thompson, of the United States Geological Survey, has discovered pictographs at Fool Creek Cañon, Utah, shown in Figure 154, which strongly resemble those still made by the Moki of Arizona. Several characters are identical with those last mentioned, and represent human figures, one of which is drawn to represent a man, shown by a cross, the upper arm of which is attached to the perinæum. These are all drawn in red color and were executed at three different periods. Other neighboring pictographs are pecked and unpainted, while others are both pecked and painted.

Both of these pictographs from Utah may be compared with the Moki pictographs from Oakley Springs, Arizona, copied in Figure 1, page 30.

Dr. G. W. Barnes, of San Diego, California, has kindly furnished sketches of pictographs prepared for him by Mrs. F. A. Kimball, of National City, California, which were copied from records 25 miles northeast of the former city. Many of them found upon the faces of large rocks are almost obliterated, though sufficient remains to permit tracing. The only color used appears to be red ocher. Many of the characters, as noticed upon the drawings, closely resemble those in New Mexico, at Ojo de Benado, south of Zuñi, and in the cañon leading from the cañon at Stewart's ranch, to the Kanab Creek Cañon, Utah. This is an indication of the habitat of the Shoshonian stock apart from the linguistic evidence with which it agrees.

The power of determining the authorship of pictographs made on materials other than rocks, by means of their general style and type,

can be estimated by a comparison of those of the Ojibwa, Dakota, Haida, and Innuit of Alaska presented in various parts of this paper.

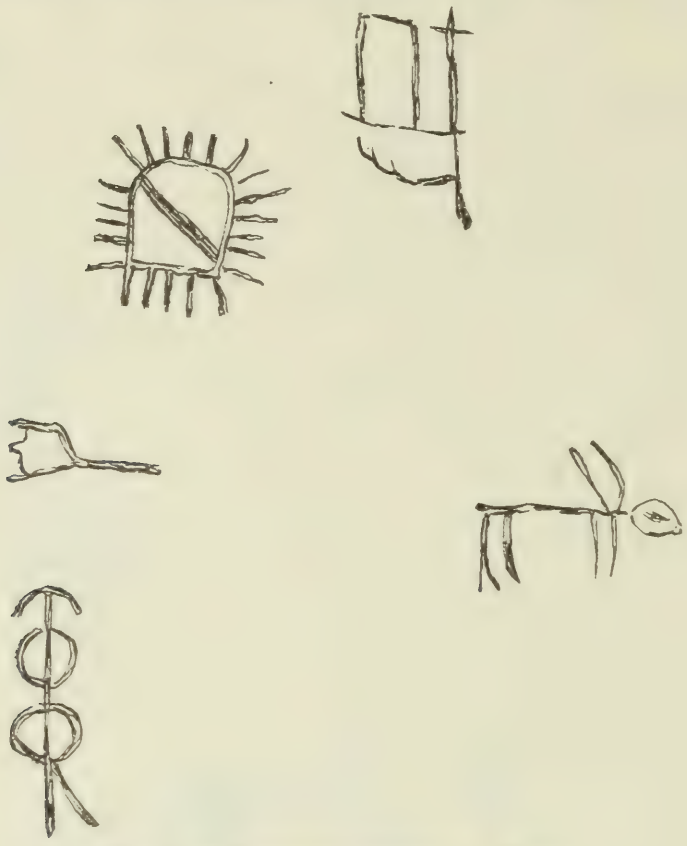


FIG. 153.—Shoshonian petroglyph. Utah.

PRESENCE OF CHARACTERISTIC OBJECTS.

With regard to the study of the individual characters themselves to identify the delineators of pictographs, the various considerations of fauna, religion, customs, tribal signs, indeed, most of the headings of this paper will be applicable. It is impracticable now to give further details in this immediate connection, except to add to similar particulars before presented the following notes with regard to the arrangement of hair and display of paint in identification.

FIG. 154.—Shoshonian rock-painting. Utah.

A custom obtains among the Absaroka, which, when depicted in pictographs, as is frequently done, serves greatly to facilitate identification of the principal actors in events recorded. This consists in wearing false hair, attached to the back of the head and allowed to hang down over the back. Horse hair, taken from the tail, is arranged in 8 or 10 strands, each about as thick as a finger, and

laid parallel with spaces between them of the width of a single strand. Pine gum is then mixed with red ocher, or vermilion, when the individual can afford the expense, and by means of other hair, or fibers of any kind laid cross-wise, the strands are secured, and around each intersection of hair a ball of gum is plastered to hold it in place. About 4 inches further down, a similar row of gum balls and cross strings are placed, and so on down to the end. The top of the tail ornament is then secured to the hair on the back of the head. The Indians frequently incorporate the false hair with their own so as to lengthen the latter without any marked evidence of the deception. Nevertheless the transverse fastenings with their gum attachments are present. The Arikara have adopted this custom of late, and they have obtained it from the Hidatsa, who, in turn, learned it of the Absaroka.

In picture-writing this is shown upon the figure of a man by the presence of parallel lines drawn downward from the back of the head, with cross lines, the whole appearing like small squares or a piece of net.

Dr. George Gibbs mentions a pictograph made by one of the Northwestern tribes (of Oregon and Washington) upon which "the figure of a man, with a long queue, or scalp-lock, reached to his heels, denoted a Shoshonee, that tribe being in the habit of braiding horse- or other hair into their own in that manner." See Contrib. to N. A. Ethnol., Vol. I, p. 222.

This may have reference to the Shoshoni Indians among the extreme Northwestern tribes, but it can by no means be positively affirmed that the mark of identification could be based upon the custom of braiding with their own hair that of animals to increase the length and appearance of the queue, as this custom also prevails among the Absaroka and Arikara Indians of Montana and Dakota, respectively, as above described.

Pictures drawn by some of the northern tribes of the Dakota, the Titon, for instance, show the characteristic and distinctive features for a Crow Indian to be the distribution of the red war paint, which covers the forehead. A Dakota upon the same picture is designated by painting the face red from the eyes down to the end of the chin. Again, the Crow is designated by a top-knot of hair extending upward from the forehead, that lock of hair being actually worn by that tribe and brushed upward and slightly backward. See the seated figure in the record of Running-Antelope in Fig. 127, page 210.

The Pueblos generally, when accurate and particular in delineation, designate the women of that tribe by a huge coil of hair over either ear. This custom prevails also among the Coyotèro Apaches, the women wearing the hair in a coil to denote a virgin or an unmarried person, while the coil is absent in the case of a married woman.

The following remarks are extracted from the unpublished "Catalogue of the Relics of the Ancient Builders of the Southwest Tablelands," by Mr. Thomas V. Keam:

"The Maltese cross is the emblem of a virgin; still so recognized by the Mokis. It is a conventional development of a more common emblem of maidenhood, the form in which the maidens wear their hair arranged as a disk of three or four inches in diameter upon each side of the head. This discoidal arrangement of their hair is typical of the emblem of fructification, worn by the maiden in the Muingwa festival. Sometimes the hair, instead of being worn in the complete discoid form, is dressed from two curved twigs, and presents the form of two semicircles upon each side of the head. The partition of these is sometimes horizontal and sometimes vertical. A combination of both of these styles presents the form from which the Maltese cross was conventionalized. The brim decorations are of ornamental locks of hair which a maiden trains to grow upon the sides of the forehead."

This strongly marked form of Maltese cross, the origin of which is above explained, appears frequently in the pottery, and also in the petroglyphs of the Moki.

Regarding the apparent subject matter of pictographs an obvious distinction may be made between hunting and land scenes such as would be familiar to interior tribes and those showing fishing and water transportation common to seaboard and lacustrine peoples. Similar and more perspicuous modes of discrimination are available. The general scope of known history, traditions, and myths may also serve in identification.

Knowledge of the priscan homes and of the migrations of tribes necessary to ascertain their former habitat in connection with the probable age of rock-etchings or paintings is manifestly desirable.

MODES OF INTERPRETATION.

It is obvious that before attempting the interpretation of pictographs, concerning which no direct information is to be obtained, there should be a full collection of known characters, in order that through them the unknown may be learned. When any considerable number of objects in a pictograph are actually known, the remainder may be ascertained by the context, the relation, and the position of the several designs, and sometimes by the recognized principles of the art.

The Bureau of Ethnology has been engaged, therefore, for a considerable time in collating a large number of characters in a card-catalogue arranged primarily by similarity in forms, and in attaching to each character any significance ascertained or suggested. As before explained, the interpretation upon which reliance is mainly based is that which has been made known by direct information from Indians who themselves were actually makers of pictographs at the time of giving the interpretation. Apart from the comparisons obtained by this collation, the only mode of ascertaining the meaning of the characters, in other words, the only key yet discovered, is in the study of the gesture-sign included in many of them. The writer several years ago suggested that among people where a system of ideographic gesture-signs prevailed, it would be expected that their form would appear in any mode of artistic representation made by the same people with the object of conveying ideas or recording facts. When a gesture-sign had been established and it became necessary or desirable to draw a character or design to convey the same ideas, nothing could be more natural than to use the graphic form or delineation which was known and used in the gesture-sign. It was but one more step, and an easy one, to fasten upon bark, skins, or rocks the evanescent air pictures of the signs.

The industrious research of Dr. D. G. Brinton, whose recent work, The Lenâpé and their Legends, before mentioned, is received as this paper passes through the press, has discovered passages in Rafinesque's generally neglected and perhaps unduly discredited volumes, by which that eccentric but acute writer seems to have announced the general proposition that the graphic signs of the Indians correspond to their manual signs. He also asserted that he had collected a large number of them, though the statement is not clear, for if all Indian pictographs are, in a very general sense, "based upon their language of signs," all of those pictographs might be included in his alleged collection, without an ascertained specific relation between any pictograph and any sign. It is probable, however, that Rafinesque actually had at least valuable notes on the subject, the loss of which is greatly to be regretted.

In the paper "Sign Language among the North American Indians," published in the First Annual Report of the Bureau of Ethnology, a large number of instances were given of the reproduction of gesture lines in the pictographs made by the North American Indians, and they appeared to be most frequent when there was an attempt to convey subjective ideas. These were beyond the range of an artistic skill limited to the rough presentation of objects in outline. It was suggested, therefore, that the part of pictographs which is the most difficult of interpretation in the absence of positive knowledge, was the one in the elucidation of which the study of sign-language would assist. Many pictographs in the present paper, the meaning of which is definitely known from direct sources, are noted in connection with the gesture-signs corresponding with the same idea, which signs are also understood from independent evidence.

So numerous and conclusive are these examples, that it is not necessary to add to them save by presenting the pictograph copied in Figure 155, as one of special importance in this connection.

During the summer of 1882 Dr. W. J. Hoffman visited the Tule River Agency, California, where he found a large rock painting, of which Figure 155 is a copy made by him, the following being his description:

The agency is located upon the western side of the Sierra Nevada in the headwater cañons of the branches of the south fork of Tule River. The country is at present occupied by several tribes of the Yokuts linguistic stock, and the only answer received to inquiries respecting the age or origin of the record was, that it was found there when the ancestors of the present tribes arrived. The local migrations of the various Indian tribes of this part of California are not yet known with sufficient certainty to determine to whom the records may be credited, but all appearances with respect to the weathering and disintegration of the rock upon which the record is etched, the appearance of the coloring matter subsequently applied, and the condition of the small depressions made at the time for mixing the pigments with a viscous substance would indicate that the work had been performed about a century ago.

The Tulare Indians have been residents of that part of the State for at least one hundred years, and the oldest now living state that the records were found by their ancestors, though whether more than two generations ago could not be ascertained.

The drawings were outlined by pecking with a piece of quartz or other silicious rock, to the depth of from a mere visible depression to a third of an inch. Having thus satisfactorily depicted the several ideas, colors were applied which upon examination appear to have penetrated the slight interstices between the crystalline particles of the rock, which had been bruised and slightly fractured by hammering with a piece of stone. It appears probable, too, that the hammering was repeated after application of the colors to insure better results.

Upon a small bowlder, under the natural archway formed by the

breaking of the large rock, small depressions were found which had been used as mortars for grinding and mixing the colors. These depressions average 2 inches in diameter and about 1 inch in depth. Traces of color still remain, mixed with a thin layer of a shining substance resembling a coating of varnish, though of a flinty hardness.

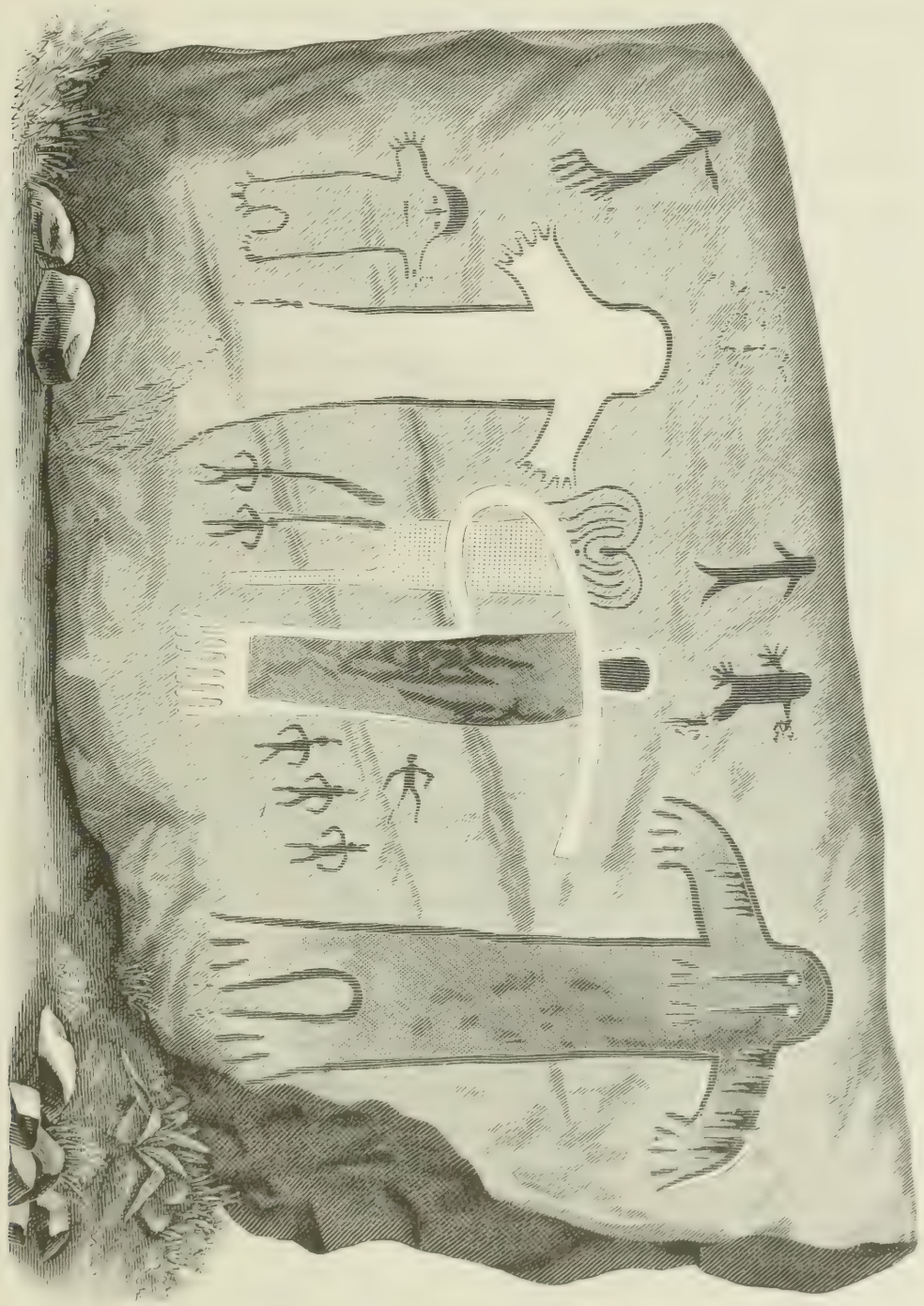


FIG. 155.—Rock-painting, Tule River, California.

This coating is so thin that it cannot be removed with a steel instrument, and appears to have become part of the rock itself.

From the animals depicted upon the ceiling it seems that both beaver and deer were found in the country, and as the beaver tail and the hoofs of deer and antelope are boiled to procure glue, it is probable that the

tribe which made these pictographs was as far advanced in respect to the making of glue and preparing of paints as other tribes throughout the United States.

Examination shows that the dull red color is red ocher, found in various places in the valley, while the yellow was an ocherous clay, also found there. The white color was probably obtained there, and is evidently earthy, though of what nature can only be surmised, not sufficient being obtainable from the rock picture to make satisfactory analysis with the blow pipe. The composition of the black is not known, unless it was made by mixing clay and powdered charcoal from the embers. The latter is a preparation common at this day among other tribes.

An immense granite bowlder, about 20 feet in thickness and 30 in length, is so broken that a lower quarter is removed, leaving a large square passageway through its entire diameter almost northwest and southeast. Upon the western wall of this passageway is a collection of the colored sketches of which Figure 155 is a reduced copy. The entire face of the rock upon which the pictograph occurs measures about 12 or 15 feet in width and 8 in height. The ceiling also contains many characters of birds, quadrupeds, etc. No. 1 in the figure measures 6 feet in height, from the end of the toes to the top of the head, the others being in proportion as represented.

The attempt at reproducing gestures is admirably portrayed, and the following explanations are based upon such natural gestures as are almost universally in use:

No. 1 represents a person weeping. The eyes have lines running down to the breast, below the ends of which are three short lines on either side. The arms and hands are in the exact position for making the gesture for rain. It was evidently the intention of the artist to show that the hands in this gesture should be passed downward over the face, as probably suggested by the short lines upon the lower end of the tears. This is a noticeable illustration of the general term used by Indians when making the gesture for weeping; *i. e.*, "eye-rain." It is evident that sorrow is portrayed in this illustration, grief based upon the sufferings of others who are shown in connection therewith.

Nos. 2, 3, 4. Six individuals apparently making the gesture for "hunger," by passing the hands towards and backward from the sides of the body, denoting a "gnawing sensation," as expressed by Indians. No. 4 occupying a horizontal position, may possibly denote a "dead man," dead of starvation, this position being adopted by the Ojibwa, Blackfeet, and others as a common way of representing a dead person. The varying lengths of head ornaments denote different degrees of position as warriors or chiefs.

Nos. 5, 6, 7, 8, 9 are individuals in various shapes making gestures for negation, or more specifically *nothing*, *nothing here*, a natural and universal gesture made by throwing one or both hands outward toward either side of the body. The hands are extended also, and, to make the action apparently more emphatic, the extended toes are also shown on

Nos. 5, 6, 7, and 9. The several lines upon the leg of No. 9 refer evidently to trimmings upon the leggings.

No. 10 is strikingly similar to the Alaskan pictographs (see No. 1 of Figure 55, page 153) indicating *self* with the right hand, and the left pointing away, signifying *to go*.

No. 11 is an ornamented head with body and legs, and is unintelligible. This may probably refer to a Shaman, the head being similar to like personages as represented by the Ojibwa and Iroquois.

Similar drawings occur at a distance of about 10 miles southeast of this locality, as well as at other places toward the northwest, and it appears probable that the present record was made by a portion of a tribe which had advanced for the purpose of selecting a new camping place, but failing to find the necessary quantities of food for sustenance, this notice was erected to advise their successors of their misfortune and ultimate departure toward the northwest. It is noticeable, also, that the picture is so placed upon the rock that the extended arm of No. 10 points toward the north.

The foregoing description is substantially the same as published by Dr. Hoffman in Transactions of the Anthropological Society, Washington, II, 1883, pages 128–132.

The limits of this paper do not allow of presenting a list of the characters in the pictographs which have become known. It may be properly demanded, however, that some of the characters in the petroglyph, Figure 1, should be explained. The following is a list of those which were interpreted to Mr. Gilbert, as mentioned on page 29 *supra*.

FIG. 156.

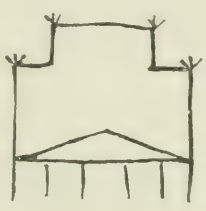


FIG. 157.

Figure 156 is an inclosure, or pen, in which ceremonial dances are performed. Figure 157 is a head-dress used in ceremonial dances.

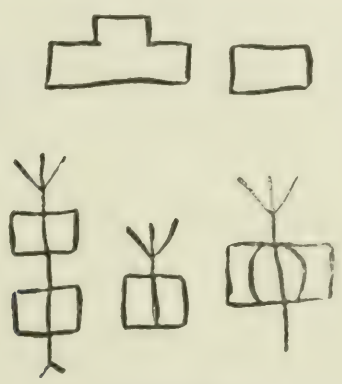


FIG. 158.

Figure 158 shows different representations of houses.

FIG. 159.

FIG. 160.

Figure 159 sketches the frames or sticks used in carrying wood on the back. Figure 160 shows different forms of arrows.

FIG. 161.

Figure 161 represents the blossoms of melons, squashes, etc.

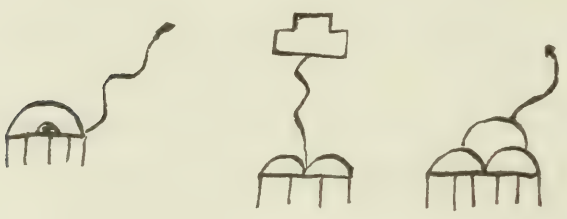


FIG. 162.

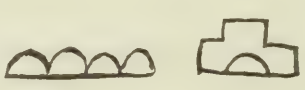


FIG. 163.

Figure 162 shows three ways in which lightning is represented. Figure 163 represents clouds.

FIG. 164.

Figure 164 represents clouds with rain descending.

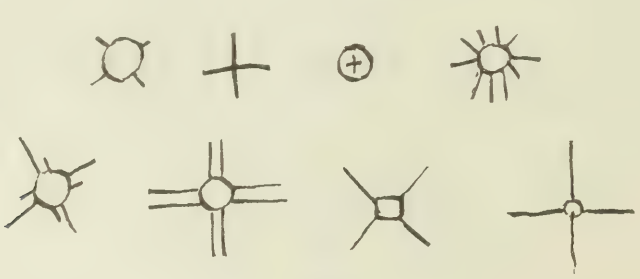


FIG. 165.

Figure 165 shows various forms of stars.

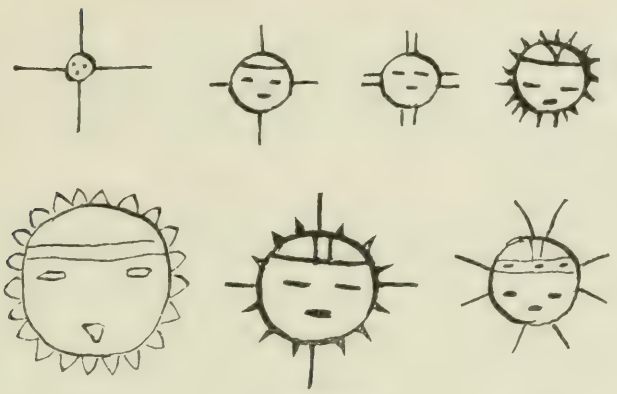


FIG. 166.

Figure 166 shows various representations of the sun.

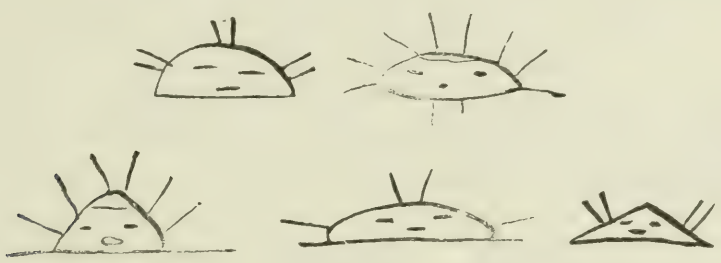


FIG. 167.

Figure 167 shows various representations of sunrise.

It is of interest in this connection that in the pictorial notation of the Laplanders the sun bears its usual figure of a man's head, rayed, as reported in Schoolcraft, *op. cit.* I, 426. See drawings in Scheffer's Hist. of Lapland, London ed., 1704.

It may be desirable also to note, to avoid misconception, that where, through this paper, mention is made of particulars under the headings of Customs, Religious, etc., which might be made the subject of graphic illustration in pictographs, and for that reason should be known as preliminary to the attempted interpretation of the latter, the suggestion is not given as a mere hypothesis. Such objective marks and conceptions of the character indicated which can readily be made objective, are in fact frequently found in pictographs and have been understood by means of the preliminary information to which reference is made. When interpretations obtained through this line of study are properly verified they can take places in the card-catalogue little inferior to those of interpretations derived directly from aboriginal pictographers.

HOMOMORPHS AND SYMMORPHS.

It has been already mentioned that characters substantially the same, or homomorphs, made by one set of people, have a different signification among others. Differing forms for the same general conception or idea are also noticed. These may be termed symmorphs. Some examples

under these titles are noted as follows, not for the purpose of giving an even approximately complete list, but merely to show the manner in which they may be compared and sometimes confused with similar characters, some of which appear in other parts of this paper.

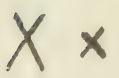


FIG. 168.

Figure 168 represents Dakota lodges as drawn by the Hidatsa. These characters when carelessly or rudely drawn can only be distinguished from personal marks by their position and their relation to other characters.

FIG. 169.

Figure 169 signifies earth lodges among the Hidatsa. The circles resemble the ground plan of the lodges, while the central markings are intended to represent the upright poles, which support the roof on the interior. Some of these are similar to the Kadiak drawing for island, Figure 47, page 147.

Figure 170 represents buildings erected by white men; the character is generally used by the Hidatsa to designate Government buildings and traders' stores.

FIG. 170.

FIG. 171.

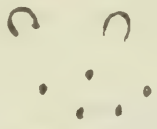


FIG. 172.

FIG. 173.

Figure 171 is the Hidatsati, the home of the Hidatsa. Inclosure with earth lodges within.

The Arikara sometimes simply mark dots or spots to signify men; when in connection with small crescents to denote horses. The numerical strength of a war party is sometimes shown in this manner, as in Figure 172.

Figure 173 was drawn for dead man by the Arikara. Cf. "nothing there," page 168.

FIG. 174.

FIG. 175.

Figure 174. In records of personal events the two lines above the head of the fallen enemy denote among the Hidatsa that the person to whom the exploit refers was the second to strike the body.

FIG. 176.

FIG. 177.

Figure 175 shows the third person to strike the enemy, as drawn by the Hidatsa.

Figure 176 means a scalp taken. Hidatsa.

Figure 177 signifies, in Hidatsa drawing, the man who struck the enemy, and who took his gun.

The following specimens from the writer's card collection are presented as having some individual interest:

Figure 178 was drawn by a Dakota Indian, at Mendota, Minnesota, and represents a man holding a scalp in one hand, while in the other is the gun, the weapon used in the destruction of the enemy. The short vertical lines below the periphery of the scalp indicate hair. The line crossing the leg of the Indian is only an indication of the ground upon which the figure is supposed to stand.

FIG. 178.

Figure 179 is taken from the winter count of Battiste Good for the year 1840–'41. He names it "Came-and-killed-five-of-Little-Thunder's-brothers winter" and "Battiste-alone-returns winter." He explains that the five were killed in an encounter with the Panis. Battiste Good was the only one of the party to escape. The capote is shown, and signifies war, as in several other instances of the same record. The five short vertical lines below the arrow signify that five were killed.

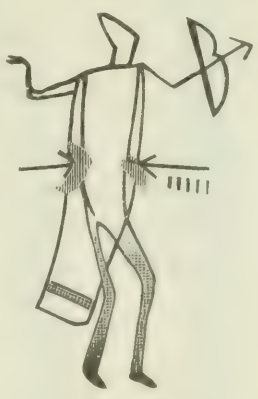


FIG. 179.

Figure 180 is taken from Mrs. Eastman's Dahcotah, or Life and Legends of the Sioux, New York, 1849, p. xxvii, and shows a Dakota method of recording the taking of prisoners. Nos. 1 and 3 are the prisoners; No. 1 being a female, as denoted by the presence of mammæ, and No. 3 a male. No. 2 is the person making the capture. It is also noted that the prisoners are without hands, to signify their helplessness.

In this connection the following quotation is taken from the Historical Collections of Louisiana, Part III, 1851, p. 124, describing a pictograph, as follows: "There were two figures of men without heads and some entire. The first denoted the dead and the second the prisoners. One of my conductors told me on this occasion that when there are any French among either, they set their arms akimbo, or their hands upon their hips, to distinguish them from the savages, whom they represent with their arms hanging down. This distinction is not purely arbitrary;

it proceeds from these people having observed that the French often put themselves in this posture, which is not used among them."

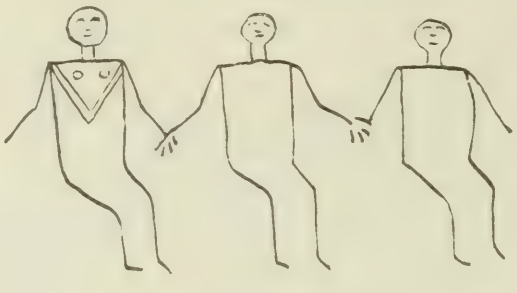


FIG. 180.

Figure 181 is taken from the winter count of Battiste Good for the year 1851–'52. In the year 1851–'52, the first issue of goods was made to

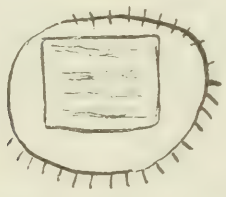


FIG. 181.—Circle of men. Dakota.

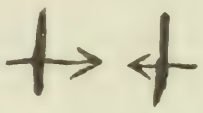


FIG. 182.—Shooting from river banks. Dakota.

the Indians, and the character represents a blanket surrounded by a circle to show how the Indians sat awaiting the distribution. The people are represented by small lines running at right angles to the circle.

Figure 182 is also from Battiste Good. An encounter is represented between two tribes, each on the banks of a river, from which arrows were fired across the water at the opposing party. The vertical lines represent the banks, while the opposing arrows denote a fight or an encounter.

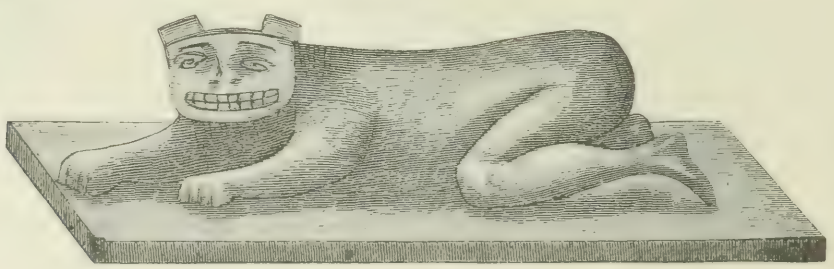


FIG. 183.—Panther. Haida.

The drawing, Figure 183, was made by Mr. J. G. Swan while on a visit to the Prince of Wales Archipelago, where he found two carved figures with panthers' heads, and claws upon the fore feet, and human feet attached to the hind legs. These mythical animals were placed upon either side of a corpse which was lying in state, awaiting burial.

This union of the human figure with that of other animals is of interest in comparison with the well-known forms of similar character in the art of Egypt and Assyria.

The feet of the accompanying Figure 184 cannot be seen, being hidden in the head of the figure beneath. It is squatting, with its hands on its knees, and has a wolf's head. Arms, legs, mouth, jaws, nostrils, and earholes are scarlet; eyebrows, irises, and edges of the ears black. The figure is reproduced from The Northwest Coast of America, being results of recent ethnological researches from the collections of the Royal Museums at Berlin. (Trans. from German.) New York, Pl. 7, Fig. 3.

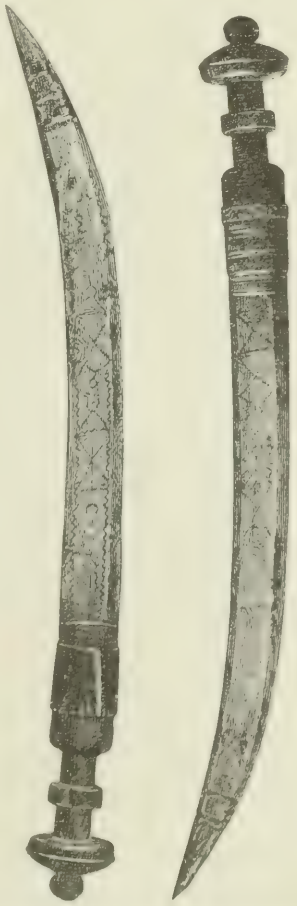
FIG. 184.—Wolf head. Haida.

The accompanying illustration, Figure 185, represents a knife from Africa, which bears upon both sides of the blade incised characters of the human form, strikingly similar to those found among the Ojibwa. The lines running upward from the head are identical with an Ojibwa form of representing a meda, or Shaman, while the hour-glass form of body is also frequently found, though generally used to designate a woman, the lower part of the body representing the skirt. In the present instance, it may have allusion to the peculiar skirt-like dress often worn by the men among the tribes of Northern Africa.

The lines extending from the middle of the body downward to below the skirt and terminating in an irregular knob somewhat resemble the Pueblo method of designating sex, the male being shown by a small cross, and the female by a simple, short, vertical line attached to the perinæum.

The upper character, in B, in addition to the line and circle extending downward from the lower extremity, shows a bird's leg and toes at either side. This is also, according to Schoolcraft, an Ojibwa method of depicting a person or being who is endowed with the power of flight into the upper regions, hence one of superior knowledge.

The history of the knife here figured is received from Mr. Thomas M. Chatard, of the National Museum, who in turn obtained it from his father, Mr. F. E. Chatard, Baltimore, Maryland, who writes that it was obtained at Cape Mesurado, Africa, in November, 1822, where the natives had attacked a recently established colony. The Africans were repulsed, and the knife was subsequently picked up on the battle-field and brought to America by the late William Seton, an officer of the United States Navy.



A. B.

FIG. 185.—Drawings on an African knife.

CONVENTIONALIZING.

The course of conventionalizing is noticeable in pictographs as well as in gesture-signs, on the one hand, and, on the other, as it appears in all forms of graphic art. The analysis of such conventions in form could be pursued at great length with regard to the pictographs now known in the same manner as has been done with success by Dr. Harrison Allen in his work "An analysis of the Life-form in Art," Philadelphia, 1875. Some suggestions may be obtained from the present paper, especially from examples given under the headings of Ideographs, page 219, and Homomorphs and Symmorphs, page 239. See also conventionalized sign for Ponka in Winter Count No. I for 1778–79, on page 131, and for Mandan in the same count for 1783–84, on the same page; also the conventional sign for Cheyenne, Figure 78, page 173; also the device for starvation, Figure 144, page 220, as conventionalized in Figure 145, page 221. The limits of this paper will only allow of submitting in addition the following conventionalized forms of the human figure, in some cases being merely marks arbitrarily used to represent humanity:

FIG. 186.

FIG. 187.

FIG. 188.

FIG. 189.

Figure 186 signifies men among the Arikara. The characters are used in connection with horse-shoes, to denote "mounted men." In other pictographs such spots or dots are merely numerical.

Figure 187 is drawn by the Kiatéxamut branch of the Innuits for man. It is an abbreviated form and rare.

Figure 188, drawn by the Blackfeet, signifies "Man—dead." This is from a pictograph in Wind River Mountains. See Jones's Northwestern Wyoming, etc., *op. cit.*

Figure 189 is the Kiatéxamut Innuit drawing for man. This figure is armless; generally represents the person addressed.

FIG. 190.

FIG. 191.

FIG. 192.

FIG. 193.

Figure 190 is also a Kiatéxamut Innuit drawing for man. The figure makes the gesture for *negation.*

Figure 191, from a Californian pictograph, is a man, also gesturing *negation.*

Figure 192 is another Californian pictograph for man, making the same gesture.

Figure 193, from Schoolcraft, I, Pl. 59, No. 91, is the Ojibwa "symbol" for disabled man.

FIG. 193.

FIG. 195.

FIG. 196.

FIG. 197.

Figure 194 is the Kiatéxamut Innuit drawing for Shaman.

Figure 195, used by the Kiatéxamut Innuit, represents man supplicating.

The five figures, 196 to 200, are reproduced from Schoolcraft, Vol. I, Pl. 58, opp. p. 408. The Numbers attached are those given by that author:

Figure 196, No. 6, is the Ojibwa representative figure for man.

Figure 197, No. 10, is used by the Ojibwa to denote a spirit or man enlightened from on high, having the head of the sun.

FIG. 198.

FIG. 199.

FIG. 200.

FIG. 201.

Figure 198, No. 20, is drawn by the Ojibwa for a "wabeno" or Shaman.

Figure 199, No. 30, is the Ojibwa "symbol" for an evil or one-sided "meda" or higher grade Shaman.

Figure 200, No. 29, is the Ojibwa general "symbol" for a meda.

Figure 201 is drawn by the Hidatsa for man.

FIG. 202.

FIG. 203.

FIG. 204.

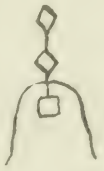


FIG. 205.

Figure 202, from Schoolcraft, I, Pl. 58, No. 3, is an Ojibwa drawing of a headless body.

Figure 203, from Schoolcraft, I, Pl. 58, No. 2, is another Ojibwa figure for a headless body, perhaps female.

Figure 204, contributed by Mr. Gilbert Thompson, is a drawing for man, made by the Moki in Arizona.

Figure 205, reproduced from Schoolcraft, I, Pl. 64, opposite page 424, is a drawing from the banks of the River Yenesei, Siberia, by Von Strah-

lenberg, in his historical and geographical description of the northern and eastern parts of Europe, Asia, etc. London, 1738.

The similarity to characters on Figure 185 is obvious.

Figure 206, also from Strahlenberg, and quoted in Schoolcraft, Vol. I, Pl. 66, Fig. 4, opp. p. 342, was found in Siberia, and is identical with the character which, according to Schoolcraft, is drawn by the Ojibwa to represent speed and the power of superior knowledge by exaltation to the regions of the air, being, in his opinion, a combination of bird and man.

FIG. 206.

It is to be noticed that some Ojibwa recently examined regard the character merely as a human figure with outstretched arms, and fringes pendant therefrom. It has, also, a strong resemblance to some of the figures in the Dakota Winter Counts (those for 1854–'55 and 1866–'67, pages 121 and 124, respectively), in which there is no attempt understood to signify any thing more than a war-dress.

FIG. 207.

Figure 207, according to Schoolcraft, Vol. I, Pl. 58, No. 58, is the Ojibwa drawing symbolic for an American.

ERRORS AND FRAUDS.

No large amount of space need be occupied in the mention of recognized pictographic frauds, their importance being small, but much more than is now allowed would be required for the discussion of controverted cases.

There is little inducement, beyond a disposition to hoax, to commit actual frauds in the fabrication of rock-carvings. The instances where inscribed stones from mounds have been ascertained to be forgeries or fictitious drawings have been about equally divided between simple mischief and an attempt either to increase the marketable value of some real estate, supposed to contain more, or to sell the specimens.

With regard to the much more familiar and more portable material of engraved pipes, painted robes and like curios, it is well known to all recent travelers in the West who have had former experience that the fancy prices paid by amateurs for those decorations have stimulated their wholesale manufacture by Indians at agencies (locally termed "coffee-coolers"), who make a business of sketching upon ordinary robes or plain pipes the characters in common use by them, without regard to any real event or person, and selling them as curious records.

This pictorial forgery would seem to show a gratifying advance of the Indians in civilization, but it is feared that the credit of the invention is chiefly due to some enterprising traders who have been known to furnish the unstained robes, plain pipes, paints, and other materials for the purpose, and simply pay a skillful Indian for his work, when the fresh antique or imaginary chronicle is delivered.

Six inscribed copper plates were said to have been found in a mound near Kinderhook, Pike County, Illinois, which were reported to bear a close resemblance to Chinese. This resemblance seemed not to be so extraordinary when it was ascertained that the plate had been engraved by the village blacksmith, copied from the lid of a Chinese tea-chest.

Mica plates were found in a mound at Lower Sandusky, Ohio, which, after some attempts at interpretation, proved to belong to the material known as graphic or hieroglyphic mica, the discolorations having been caused by the infiltration of mineral solution between the laminæ.

The following recent notice of a case of alleged fraud is quoted from Science, Vol. III, No. 58, March 14, 1884, page 334:

> Dr. N. Roe Bradner exhibited [at the Academy of Natural Sciences, Philadelphia, Pennsylvania,] an inscribed stone found inside a skull taken from one of the ancient mounds at Newark, Ohio, in 1865. An exploration of the region had been undertaken

in consequence of the finding of stones bearing markings somewhat resembling Hebrew letters, in the hope of finding other specimens of a like character. The exploration was supposed to have been entirely unproductive of such objects until Dr. Bradner had found the engraved stone, now exhibited, in a skull which had been given to him.

This was supplemented by an editorial note in No. 62 of the same publication, page 467, as follows:

A correspondent from Newark, Ohio, warns us that any inscribed stones said to originate from that locality may be looked upon as spurious. Years ago certain parties in that place made a business of manufacturing and burying inscribed stones and other objects in the autumn, and exhuming them the following spring in the presence of innocent witnesses. Some of the parties to these frauds afterwards confessed to them; and no such objects, except such as were spurious, have ever been known from that region.

The correspondent of Science probably remembered the operations of David Wyrick, of Newark, who, to prove his theory that the Hebrews were the mound-builders, discovered in 1860 a tablet bearing on one side a truculent "likeness" of Moses with his name in Hebrew, and on the other a Hebrew abridgment of the ten commandments. A Hebrew bible afterwards found in Mr. Wyrick's private room threw some light on the inscribed characters.

As the business of making and selling archæological frauds has become so extensive in Egypt and Palestine, it can be no matter of surprise that it has been attempted by the enterprising people of the United States. The Bureau of Ethnology has discovered several centers of that fraudulent industry.

Without further pursuing the subject of mercenary frauds, an example may be mentioned which was brought forth during the researches of the present writer and his assistant, Dr. Hoffman, which is probably as good a case of a modern antique in this line as can be presented. Figure 208 is a copy of a drawing taken from an Ojibwa pipe-stem, obtained by Dr. Hoffman from an officer of the United States Army, who had procured it from an Indian in Saint Paul, Minnesota. On a later and more minute examination, it appeared that the pipe-stem had been purchased at a store in Saint Paul, which had furnished a large number of similar objects, so large as to awaken suspicion that they were in the course of daily manufacture. The figures and characters on the pipe-stem were drawn in colors. In the present figure, which is without colors, the horizontal lines represent blue and the vertical red, according to the heraldic scheme several times used in this paper. The outlines were drawn in a dark neutral tint, in some lines approaching black; the triangular characters, representing lodges, being also in a neutral tint, or an ashen hue, and approaching black in several instances. The explanation of the figures, made before there was any suspicion of their real character, is as follows:

The first figure is that of a bear, representing the individual to whom the record pertains. The three hearts above the line, according to an

expression in gesture language, signifies a brave heart; increased numbers indicating *much* or *many*, *i. e.*, a large brave heart.

The second figure, a circle inclosing a triradiate character, refers to the personal totem. The character in the middle resembles, to some extent, the pictograph sometimes found to represent stars, though in the latter the lines center upon the disks and not at a common point.

The seven triangular characters represent the lodges of a village to which the individual to whom reference is made belongs.

The serpentine line immediately below these signifies a stream or river, near which the village is located.

The two persons holding guns in their left hands, together with another having a spear, appear to be the companions of the speaker, all of whom are members of the turtle gens, as shown by that reptile.

The curve from left to right is a representation of the sky, the sun having appeared upon the left or eastern horizon when the transaction below mentioned was enacted. In an explanation by gesture, or by pictograph, the speaker always faces the south, or conducts himself as if he did so, and begins on the left side to convey the idea of morning, if day; the hand, or line, is drawn all the way from the eastern horizon to the western. The above, then, represents the morning when a female—headless body of a woman—a member of the crane gens, was killed.

The figure of a bear below is the same apparently as number one, though turned to the right. The heart is reversed to denote sadness, grief, remorse, as expressed in gesture-language, and to atone for the misdeed committed in the proceeding the pipe is brought and offering made to the "Great Spirit."

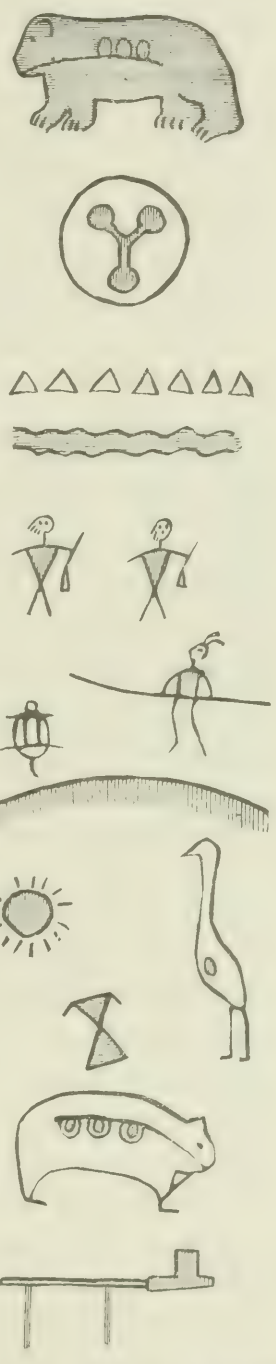


FIG. 208.—Specimen of imitated pictograph.

Altogether, the act depicted appears to have been accidental, the woman belonging to the same tribe, as can be learned from the gens of which she was a member. The regret or sorrow signified in the bear, next to the last figure, corresponds with that supposition, as such feelings would not be congruous to the Indian in the case of an enemy.

The point of interest in this pictograph is, that the figures are very skillfully copied from the numerous characters of the same kind repre-

senting Ojibwa pictographs, and given by Schoolcraft. The arrangement of these copied characters is precisely that which would be natural in the similar work of Indians. In fact, the groups constitute a thoroughly genuine pictograph, and afford a good illustration of the manner in which a record can be made. The fact that it was made and sold under false representations is its objectionable feature.

An inscribed stone found in Grave Creek Mound, near the Ohio River, in 1838, has been the subject of much linguistic contention among those who admitted its authenticity. Twenty-four characters on it have been considered to be alphabetic and one is a supposed hieroglyphic sign. Mr. Schoolcraft says that twenty-two of the characters are alphabetic, but there has been a difference of opinion with regard to their origin. One scholar finds among them four characters which he claims are ancient Greek; another claims that four are Etruscan; five have been said to be Runic; six, ancient Gaelic; seven, old Erse; ten, Phœnician; fourteen, old British; and sixteen, Celteberic. M. Levy Bing reported at the Congress of Americanists at Nancy, in 1875, that he found in the inscription twenty-three Canaanite letters, and translated it: "What thou sayest, thou dost impose it, thou shinest in thy impetuous clan and rapid chamois." (!) M. Maurice Schwab in 1857 rendered it: "The Chief of Emigration who reached these places (or this island) has fixed these statutes forever." M. Oppert, however, gave additional variety by the translation, so that all tastes can be suited: "The grave of one who was assassinated here. May God to avenge him strike his murderer, cutting off the hand of his existence."

For further particulars on this topic reference may be made to Colonel Charles Whittlesey's Archæological Frauds, in several tracts, and to The Mound Builders, by J. P. MacLean, Cincinnati, 1879, p. 90, *et seq.*

From considerations mentioned in the introduction of this paper, and others that are obvious, any inscriptions purporting to be pre-Columbian showing apparent use of alphabetic characters, signs of the zodiac, or other evidences of a culture higher than that known among the North American Indians, must be received with caution, but the pictographs may be altogether genuine, and their erroneous interpretation be the sole ground of their being discredited.

In this connection some allusion may be made to the learned discussions upon the Dighton rock before mentioned. The originally Algonkian characters were translated by a Scandinavian antiquary as an account of the party of Thorfinn, the Hopeful. A distinguished Orientalist made out clearly the word *melek* (king). Another scholar triumphantly established the characters to be Scythian, and still another made them Phœnician. But this inscription has been so manipulated that it is difficult now to determine the original details.

The course above explained, viz., to attempt the interpretation of all unknown American pictographs by the aid of actual pictographers among the living Indians, should be adopted regarding all remarkable

"finds." This course was pursued by Mr. Horatio N. Rust, of Pasadena, California, regarding the much-discussed Davenport Tablets, in the genuineness of which he believes, and which is not here placed in question Mr. Rust exhibited the drawings to Dakotas, with the result made public at the late Montreal meeting of the American Association for the Advancement of Science, and also in a letter, an extract from which is as follows:

As I made the acquaintance of several of the older and more intelligent members of the tribe, I took the opportunity to show them the drawings. Explaining that they were pictures copied from stones found in a mound, I asked what they meant. They readily gave me the same interpretation (and in no instance did either interpreter know that another had seen the pictures, so there could be no collusion). In Plate I, of the Davenport Inscribed Tablets [so numbered in the Proceedings of the Davenport Academy, Vol. II], the lower central figure represents a dome-shaped lodge, with smoke issuing from the top, behind and to either side of which appears a number of individuals with hands joined, while three persons are depicted as lying upon the ground. Upon the right and left central margins are the sun and moon, the whole surmounted by three arched lines, between each of which, as well as above them, are numerous unintelligible characters. * * * The central figure, which has been supposed by some to represent a funeral pile, was simply the picture of a dirt lodge. The irregular markings apparently upon the side and to the left of the lodge represent a fence made of sticks and brush set in the ground. The same style of fence may be seen now in any Sioux village.

The lines of human figures standing hand-in-hand indicate that a dance was being conducted in the lodge. The three prostrate forms at right and left sides of the lodge represent two men and a woman who, being overcome by the excitement and fatigue of the dance, had been carried out in the air to recover. The difference in the shape of the prostrate forms indicates the different sexes.

The curling figures or rings above the lodge represent smoke, and indicates that the dance was held in winter, when fire was used.

An example of forced interpretation of a genuine petroglyph is given by Lieutenant J. W. Gunnison, U. S. Top. Engineers, in his work entitled The Mormons, or, Latter-day Saints, in the Valley of the Great Salt Lake, etc., Philadelphia, 1852, pp. 62, 63. He furnishes two illustrations of petroglyphs taken from the cliff in Sam Pete Valley, Utah, not reproduced in this paper, which resemble the general type of the Shoshonian system. On account of various coincidences which have occurred to strikingly keep alive in the mountain brethren their idea of being the chosen of the Lord, these etchings confirm them in the belief of the inspiration of the Book of Mormon. One of their Regents has translated one of them as follows:

I, Mahanti, the 2nd King of the Lamanites, in five valleys in the mountains, make this record in the 12 hundredth year since we came out of Jerusalem. And I have three sons gone to the South country to live by hunting antelope and deer.

Among the curiosities of literature in connection with the interpretation of pictographs may be mentioned La Vèritè sur le Livre des Sauvages, par L'Abbé Em. Domenech, Paris, 1861, and Researches into the Lost Histories of America, by W. S. Blacket, London and Philadelphia, 1884.

Under the head of errors some of the most marked have arisen from the determination of enthusiastic symbolists to discover something mystical in the form of the cross wherever found.

The following quotation is taken from a work by Gabriel de Mortillet, entitled Le Signe de la Croix avant le Christianisme (Paris, Reinwald, 1866), p. 173:

On voit qu'il ne peut plus y avoir de doute sur l'emploi de la Croix comme signe religieux, bien longtemps avant le christianisme. Le culte de la Croix, répandu en Gaule avant la conquête, existait déjà dans l'Émilie à l'époque du bronze, plus de mille ans avant Jésus-Christ.

C'est surtout dans les sépultures de Golasecca où ce culte s'est révélé de la manière la plus complète: et là, chose étrange, on a trouvé un vase portant le monogramme ancien du Christ, figure 117 [reproduced in the present paper by Figure 209; the right-hand figure being from the vase, and that on the left the recognized monogram of Christ], dessiné peut-être mille ans avant la venue de Jésus-Christ. La présence isolée de ce monogramme du Christ au milieu de nombreuses Croix est-elle un fait accidentel entièrement fortuit? Des recherches plus complètes peuvent seules permettre de répondre à cette question.

FIG. 209.—Symbols of the cross.

Un autre fait fort curieux, très-intéressant à constater, c'est que ce grand développement du culte de la Croix, avant la venue du Christ, semble toujours coïncider avec l'absence d'idoles et même de toute représentation d'objets vivants. Dès que ces objets se montrent, on dirait que les Croix deviennent plus rares et finissent même par disparaître.

La Croix a donc été, dans la haute antiquité, bien longtemps avant la venue de Jésus-Christ, l'emblème sacré d'une secte religieuse qui repoussait l'idolâtrie!!!

The author, with considerable naiveté, has evidently determined that the form of the cross was significant of a high state of religious culture, and that its being succeeded by effigies, which he calls idols, showed a lapse into idolatry. The fact is simply that, next to one straight line, the combination of two straight lines forming a cross is the easiest figure to draw, and its use before art could attain to the drawing of animal forms, or their representation in plastic material, is merely an evidence of crudeness or imperfection in designing. It is worthy of remark that Dr. Schliemann, in his "Troja," page 107, presents as Fig. 38 a much more distinct cross than that given by M. Mortillet, with the simple remark that it is "a geometrical ornamentation." An anecdote told by Dr. Robert Fletcher, U. S. Army, in connection with his exhaustive paper on Tattooing Among Civilized People, published in the Transactions of the Anthropological Society of Washington, Vol. II, page 40, is also in point. Some *savants* were much excited over the form of the cross found in tattoo marks on an Arab boy, but on inquiry of the mother as to why the cross had been placed there, she simply answered "because it looked pretty." The present writer will add to the literature on the subject a reference to the cross as shown upon the arm of a Cheyenne in Cloud-Shield's winter count for the year 1790–'91, page 132, *ante*. (See also page 173.) This is explained fully by one of the common gestures for the tribal sign, Cheyenne.

"The extended index, palm upward, is drawn across the forefinger of the left hand, palm inward, several times, left hand stationary; right hand is drawn toward the body until the index is drawn clear off; then repeat. Some Cheyennes believe this to have reference to the former custom of cutting the arm as offerings to spirits, while others think that it refers to a more ancient custom, the cutting of the enemy's fingers for necklaces." The pictograph is simply a graphic representation of this gesture sign. See also the Moki use of the Maltese cross, page 232, the form of which in a rock-painting appears in *x* on Plate II, page 35.

There is no doubt that among the Egyptians and several of the peoples of the eastern hemisphere, ancient and modern, the form of the cross was used symbolically, and there is no more doubt that it was employed in a similar manner by many American tribes with reference to the points of the compass, or rather the four winds. It was also used with many differing significations. See in this paper Figure 60, page 158, Figure 143, page 220, Figure 154, page 230, Figure 165, page 238, and Figure 168, page 240. The ease with which the design was made would tend to its early adoption as a sign, an emblem, or a symbol.

Rev. S. D. Hinman states that among the Dakota, symbolic crosses always have the members equal, or of the "Greek" pattern, and are always worn resting on one foot, not two as in the St. Andrew's cross. They represent the four winds issuing from the four caverns in which the souls of men existed before embodiment. The top of the cross is the cold, all-conquering giant, the north wind. As worn on the body it is nearest the head, the seat of intelligence. The top arm, covering the heart, is the east wind, coming from the seat of life and love. The foot is the burning south wind, indicating as it is worn the seat of passion and fiery lust. The right is the gentle west wind, blowing from the spirit land, covering the lungs, from which at last the breath goes out. The center of the cross is the earth and man, sometimes indicated at that point by a circle surrounding a dot. On the upper arm an arrow is sometimes drawn, on the left a heart, on the right a star, and on the lower a sun.

SUGGESTIONS TO COLLABORATORS.

The present writer hopes to receive contributions from travelers and observers, not only in North America, but in other parts of the world. Such collaboration will always receive due credit, and when practicable will be reproduced in the language of the collaborator.

The number and the importance of the contributions received upon the collateral branch of sign-language encourages the hope of similar success in this application for assistance in the monograph on pictographs now in preparation.

The main object of the classification both of the text and of the illustrations in the present paper has been to stimulate the research and assist the collaboration invited, so that reference to the various preceding headings is unnecessary. Some practical suggestions may, however, be offered as follows:

As a small drawing of large rock inscriptions may give an exaggerated idea of the degree of finish or fineness of the subject, it is desirable, in every instance, to affix the scale of the drawing, or to give a principal dimension that may serve as a guide. A convenient scale for ordinary petroglyphs is one-sixteenth of full size. The drawing should be sufficiently close and accurate to show the character of the work. It is desirable to note the lithologic character of the rock or bowlder used; whether the drawing has been etched into the face of the rock, or pecked in more deeply with a sharp implement, and the depth of such pecking; whether the design is merely outlined, or the whole body of the figures pecked out, and whether paint has been applied to the pecked surface, or the design executed with paint only. The composition of paint should be ascertained when possible. The amount of weathering or erosion, together with the exposure, or any other feature bearing on the question of antiquity, would prove important. If actual colors are not accessible for representation the ordinary heraldic scheme of colors can be used.

That sketches even by fair artists, are of not high value in accuracy, is shown by the discrepant copies of some of the most carefully-studied pictographs, which discrepancies sometimes leave in uncertainty the points most needed for interpretation. Sketches, or still better, photographs are desirable to present a connected and general view of the characters and the surface upon which they are found. For accuracy of details "squeezes" should be obtained when practicable.

A simple method of obtaining squeezes of petroglyphs, when the lines are sufficiently deep to receive an impression, is to take ordinary

manilla paper of loose texture, and to spread the sheet, after being thoroughly wetted, over the surface desired, commencing at the top. The top edge may be temporarily secured by a small streak of starch or flour paste. The paper is then pressed upon the surface of the rock by means of a soft bristle brush, so that its texture is gently forced into every depression. Torn portions of the paper may be supplied by applying small patches of wet paper until every opening is thoroughly covered. A coating of ordinary paste, as above mentioned, is now applied to the entire surface, and a new sheet of paper, similarly softened by water, is laid over this and pressed down with the brush. This process is continued until three or four thicknesses of paper have been used. Upon drying, the entire mold will usually fall off by contraction. The edge at the top, if previously pasted to the rock, should be cut. The entire sheet can then be rolled up, or if inconveniently large can be cut in sections and properly marked for future purposes. This process yields the negative. To obtain the *positive* the inner coating of the negative may be oiled, and the former process renewed upon the cast.

Pictographs, when of bright colors and upon a light-colored surface, may readily be traced upon tracing linen, such as is employed by topographers. Should the rock be of a dark color, and the characters indistinct, a simple process is to first follow the pictographic characters in outline with colored crayons, red chalk, or dry colors mixed with water and applied with a brush, after which a piece of muslin is placed over the surface and pressed so as to receive sufficient coloring matter to indicate the general form and relative positions of the characters. After these impressions are touched up the true position may be obtained by painting the lines upon the back of the sheet of muslin, or by making a true tracing of the negative.

A mode of securing the outline once adopted was to clear out the channels of the intaglios, then, after painting them heavily, to press a sheet of muslin into the freshly-painted depressions. The objection to this method is the obvious damage inflicted on the inscription. Before such treatment, if the only one practicable, all particulars of the work to be covered by paint should be carefully recorded.

The locality should be reported with detail of State (or Territory), county, township, and distance and direction from the nearest post-office, railway station or country road. In addition the name of any contiguous stream, hill, bluff, or other remarkable natural feature should be given. The name of the owner of the land is of some secondary value, but that indication is liable to frequent changes. The site or station should be particularly described with reference to the surrounding country and to the natural circumstances and geological history of the location.

When numbers and groups of petroglyphs or rock paintings occur, their relation to each other, to the points of the compass, or to topo-

graphical features should be noted, if possible, by an accurate survey, otherwise by numeration and sketching.

The following details should be carefully noted: The direction of the face of the rock. The presence of probable trails and gaps which may have been used in shortening distances in travel. Localities of mounds and caves, if any, in the vicinity. Ancient camping grounds, indicated by fragments of pottery, flint chips, etc. Existence of aboriginal relics, particularly flints which may have been used in pecking; these may be found at the base of the rocks upon which petroglyphs occur. The presence of small mortar-holes which may have served in the preparation of colors.

With reference to pictographs on other objects than rock the material upon which they appear and the substances used in their execution should be reported, as indicated in another part of this paper.

With reference to all kinds of pictographs, it should be noted that mere descriptions without reproduction are of little value. Probable age and origin and traditions relating to them should be ascertained. Their interpretation by natives of the locality who themselves make pictographs or who belong to people who have lately made pictographs is most valuable, especially in reference to such designs as do not represent objects of nature, and which may be either conventional or connected with lines of gesture-signs.

SMITHSONIAN INSTITUTION——BUREAU OF ETHNOLOGY.

POTTERY

OF THE

ANCIENT PUEBLOS.

BY

WILLIAM H. HOLMES.

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POTTERY OF THE ANCIENT PUEBLOS.

By WILLIAM H. HOLMES.

INTRODUCTORY.

A study of the pottery of the ancient Pueblo peoples is here commenced in accordance with plans formed years ago by the Director of the Bureau of Ethnology. His aim was to present to the world a monographic work upon the splendid material obtained by the Bureau, including with it the important collections made previously by himself. The preparation of this work has been postponed from time to time with the view of completing the collections, which were being enriched by annual visits to the Pueblo country. Meantime I began the study of the collection for the purpose of securing at the start a satisfactory classification of the material on hand.

The present paper is the first result of that study. I have, however, taken up only the more ancient groups of ware, leaving the rest for subsequent papers. A comparative study is not attempted, for the reason that a detailed examination of all the groups to be considered is absolutely essential to satisfactory results. Conclusions drawn from partial observations lead generally to error.

There were great difficulties in the way of treating satisfactorily the modern varieties of ware, as no one had sufficient familiarity with the language of the Pueblo tribes to discuss the ideographic phases of the ornamentation. Mr. F. H. Cushing's studies bid fair to supply this want, and his recent return from Zuñi has led to the preparation of the valuable paper presented in this volume.

Mr. James Stevenson, who has procured a large portion of the collection of modern pottery, has published catalogues with copious illustrations. Most of the cuts have been prepared under my supervision, and have been selected with the view of securing engravings of a full series of typical examples for a final work.

PUEBLO ART.

DISTRIBUTION.—The ancient Pueblo peoples dwelt in a land of cañons and high plateaus. They had their greatest development in the valley of the Rio Colorado, where they delighted to haunt the shadows of the deepest gorges and build their dwellings along the loftiest cliffs. The limits of their territory are still in a measure undefined. We discover remnants of their arts in the neighboring valleys of Great Salt Lake, the Arkansas, and the Rio Grande, and southward we can trace them beyond the Rio Gila into the table-lands of Chihuahua and Sonora.

Thus outlined, we have an area of more than one hundred thousand square miles, which has at times more or less remote been occupied by tribes of town-building and pottery-making Indians.

CHARACTER.—High and desert-like as this land is, it has borne a noble part in fostering and maturing a culture of its own—a culture born of unusual needs, shaped by exceptional environment, and limited by the capacities of a peculiar people. Cliff houses and cavate dwellings are not new to architecture, and pottery resembling the Pueblo ware in many respects may be found wherever man has developed a corresponding degree of technical skill; yet there is an individuality in these Pueblo remains that separates them distinctly from all others and lends a keen pleasure to their investigation.

TREATMENT.—The study of prehistoric art leads inevitably to inquiries into the origin of races. Solutions of these questions have generally been sought through migrations, and these have been traced in a great measure by analogies in archæologic remains; but in such investigation one important factor has been overlooked, namely, the laws that govern migrations of races do not regulate the distribution of arts. The pathways do not correspond, but very often conflict. The arts migrate in ways of their own. They pass from place to place and from people to people by a process of acculturation, so that peoples of unlike origin practice like arts, while those of like origin are found practicing unlike arts. The threads of the story are thus so entangled that we find it impossible to trace them backward to their beginnings.

For the present, therefore, I do not propose to study the arts of this province with the expectation that they will furnish a key to the origin of the peoples, or to the birthplace of their arts, but I shall treat them with reference rather to their bearing upon the processes by which culture has been achieved and the stages through which it has passed, keeping always in mind that a first requisite in this work is a systematic and detailed study of the material to be employed.

THE CERAMIC ART.

AGE.—The ceramic art of the ancient Pueblos is practically a unit. We find in its remains few indications of distinct periods. There is nothing to carry us back to a remote past. The oldest specimens known are nearly as high in the scale as the latest. In the deposits of caves and burial-grounds we find, so far, nothing more archaic than in the ruins of once populous villages and beneath the fallen walls of hewn-stone cliff houses. In methods of manufacture and in styles of ornamentation there is no specific distinction.

Once introduced, there is much in the character of the country to develop this art. The people were sedentary, and thus able to practice the art continuously for a long period; and in a country so arid there was often great need of vessels suitable for the transportation and storage of water.

MATERIAL.—Nature was lavish in her supply of the material needed. Suitable clay could be found in nearly every valley, both in the well-exposed strata and in the sediment of streams. I have noticed that after the passage of a sudden storm over the mesa country, and the rapid disappearance of the transient flood, the pools of the arroyos would retain a sediment of clay two or three inches thick, having a consistency perfectly suited to the hand of the potter. This I have taken without tempering and have made imitations of the handsome vases whose remnants I could pick up on all sides. In drying and burning, these vessels were liable to crack and fall to pieces; but I see no reason why, with the use of proper tempering materials, this natural paste might not be successfully employed. It would not be difficult, however, to find the native clay among the sedimentary formations of this district. Usually the clay has been very fine grained, and when used without coarse tempering the vessels have an extremely even and often a conchoidal fracture.

TEMPERING.—The materials used in tempering do not often come into notice. It appears that, in a majority of cases, fine sand, probably derived from naturally disintegrated rocks, was employed. A large percentage of rather coarse sand is found in the more roughly finished coil-made ware, but vessels intended for smooth finish have little perceptible tempering material.

The speckled appearance of some of the abraded surfaces suggests the use of pulverized potsherds, a practice frequently resorted to by the modern tribes. In some localities, notably in the south, we find a

slight admixture of mica, which may have come from the use of pulverized micaceous rock.

CONSTRUCTION.—No one can say just how the materials were manipulated, fashioned into vessels, and baked; yet many facts can be gleaned from a critical examination of the vessels themselves; and an approximate idea of the various processes employed may be formed by a study of the methods of modern potters of the same region or of corresponding grades of culture.

It is evident that the vessels were built and finished by the hands alone; no wheel was used, although supports, such as shallow earthen vessels, baskets, and gourds were certainly employed to a considerable extent. Primitive processes of building have varied considerably. The simplest method perhaps was that of shaping a single mass of clay by pressure with the fingers, either with or without the assistance of a mold or support. The mold would be useful in shaping shallow vessels, such as plates, cups, and bowls. The walls of vessels of eccentric forms or having constricted apertures would be carried upward by the addition of small more or less elongated masses of clay, with no support but the hand or an implement held in the hand. Casting proper, in regularly constructed molds, was practiced only by the more cultured races, such as the Peruvians. A variety of methods may have been employed in the construction of a single piece.

SURFACE FINISH.—A great deal of attention was given to surface finish. In the coiled ware the imbricate edges of the fillets were generally either smoothed down and obliterated entirely, or treated in such a way as to give a variety of pleasing effects of relief decoration. Vessels with smooth surfaces, whether built by coiling, modeling, or molding, very often received a thin coat of fine liquid clay, probably after partial drying and polishing. This took the place of the enamels used by more accomplished potters, and being usually white, it gave a beautiful surface upon which to execute designs in color. Before the color was applied the surface received a considerable degree of polish by rubbing with a suitable implement of stone or other material. Attention was given chiefly to surfaces exposed to view—the interior of bowls and the exterior of narrow-necked vases.

FIRING.—The firing of the ancient ware seems to have been carefully and successfully accomplished. The methods probably did not differ greatly from those practiced by the modern Pueblo tribes. The ware is, as a rule, light in color, but is generally much clouded by the dark spots that result from imperfections in the methods of applying the fire. The heat was rarely great enough to produce anything like vitrifaction of the surface, and the paste is seldom as hard as our stone ware.

GLAZE.—A great deal has been said about the glaze of native American wares, which exists, if at all, through accident. The surface of the white ware of nearly all sections received a high degree of mechanical polish, and the effect of firing was often to heighten this and give

at times a slightly translucent effect; a result of the spreading or sinking of the coloring matter of the designs.

HARDNESS.—The paste exposed in fractured edges can be scratched with a steel point, and often with ease. Some of the white pottery of ancient Tusayan can be carved almost as readily as chalk or sun-dried clay. At the same time all localities furnish occasionally specimens that through the accidents of firing have the ring and hardness of stoneware. The ancient pottery is generally superior in hardness to that produced by the historic tribes.

COLOR.—This pottery presents a pleasing variety of color, although the light grays prevail, especially in the more archaic varieties. The general color probably depended greatly upon the natural constituents of the clay and the degree of heat applied, and these conditions varied with the locality and the people. Reds and browns result from the presence of iron, which may have been oxidized in burning, or the red oxides may have been used in rare cases as coloring matter in kneading the clay. The surface is often lighter than the mass; a condition probably resulting from the presence of vegetable matter in the clay, which is destroyed on the surface and remains unchanged within. In the south the colors of the paste are often slightly reddish or yellowish in hue. It is notable that a small percentage of the ware of all localities is red. This gives rise to the suggestion that vessels of this color probably had some especial or sacred use. Color is known to have an intimate connection with superstitious observances among many barbarian peoples.

FORM.—In form the ancient ware is universally simple and pleasing. Many shapes known to both civilized and barbarian art are absent. High-necked bottles and shallow plates are of rare occurrence, and pitchers, canteens or lenticular bottles, and vessels with legs and stands are unknown. There is a notable dearth of life forms, a circumstance that would seem to indicate the rather tardy development of a taste for modeling—a condition which may have resulted from the comparatively recent origin or introduction of art in clay.

Vessels with full globular bodies prevail. The bottoms are generally round or a little pointed, indicating primitive conditions of life and suggesting great simplicity in methods of manufacture and in the models copied.

Origin of Forms.—There can be no doubt that ceramic forms are to a great extent derivative, and the search for their originals will constitute a most important feature in our studies. Turning to nature for possible originals, we find them liberally supplied by both the animal and the vegetable kingdom. The shells of the sea shore were probably among the first receptacles for food and drink. We have examples of pottery from the mounds in the Mississippi Valley, representing three or four distinct varieties of shells. The shells of turtles and the horns of cattle and other animals have also served as models.

The vegetable world furnishes many originals; the gourd, for example, was utilized at a very early date. Its forms are greatly varied, and

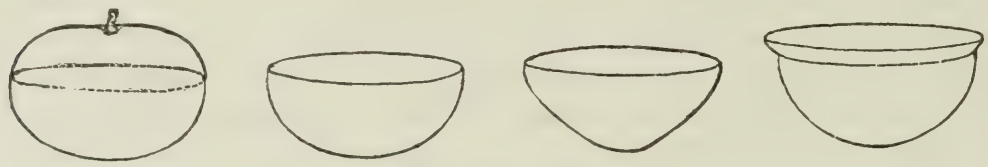


FIG. 210.—Origin of forms.

must have given rise to many primitive shapes of vessels in clay, and perhaps in wicker-work and wood. One of the ordinary forms cut off

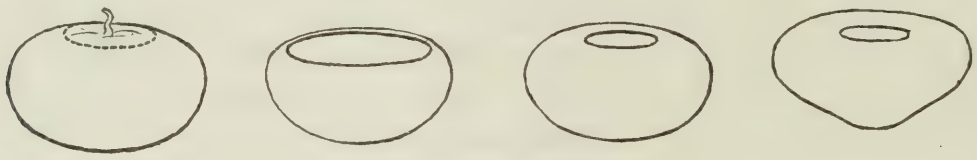


FIG. 211.—Origin of forms.

midway would suggest the series of bowls outlined in Fig. 210. Simply perforated it would give rise to the series illustrated in Fig. 211.

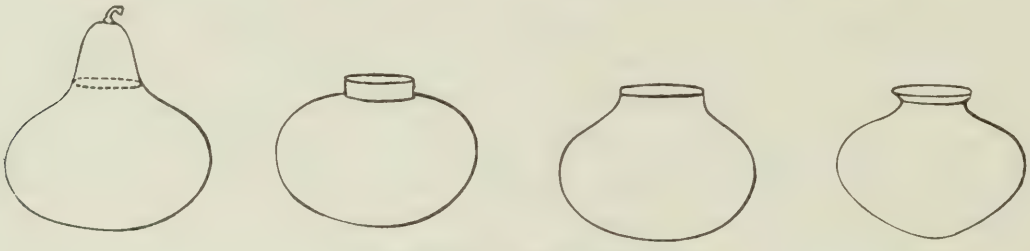


FIG. 212.—Origin of forms.

Wide-mouthed vases would be suggested as indicated in Fig. 212, bottles as shown in Fig. 213, and eccentric forms as seen in Fig. 214.

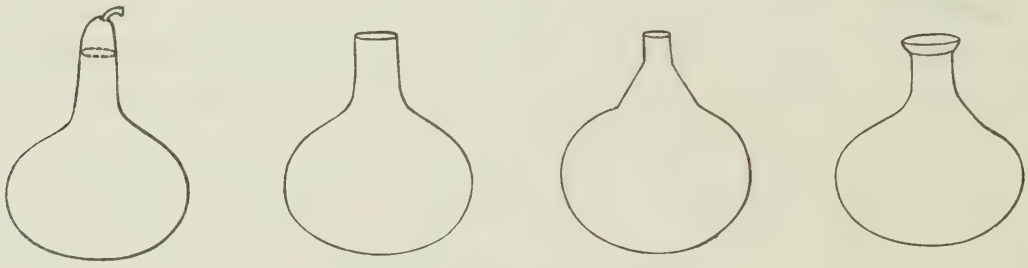


FIG. 213.—Origin of forms.

FIG. 214.—Origin of forms.

These particular examples are presented in illustration of the manner in which forms may be derived and nothing more, as there are many

possible origins of the same forms. In a separate paper I have amplified this topic, and have discussed the relative importance of the influence of natural and artificial products upon the conformation of utensils of clay.

HANDLES.—In searching for the first suggestions of handles we must certainly go back to the very beginnings of art, when men and women employed leaves or vines to carry their children or their food, or to suspend them for safety from the trees of the forest. The art of basketry would naturally fall heir to this use of handles. Clay, bronze, and iron, when they came into use, would also inherit some of the forms thus developed. There are, however, other sources of equal importance, among which are animal forms, such as horns, and various forms of vegetable growth, such as the gourd. The latter may again serve as an illustration.

By cutting the body of the gourd longitudinally at one side of the axis, we have dippers with straight or curved necks or handles. The primitive potter would in like manner have the suggestion of a handled vessel in clay, which, carried forward by the ever active spirit of improvement, would in time give us the series shown in Figs. 215 and 216:

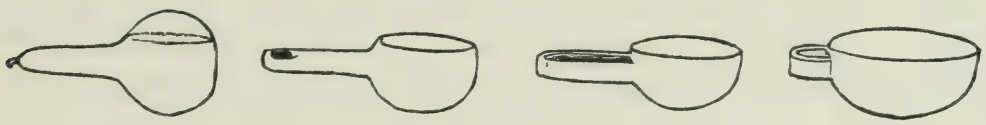


FIG. 215.—Origin of handles.

FIG. 216.—Origin and development of handles

ORNAMENT.—The shapes of vessels are, in a measure, ornamental, but it is difficult to say just how much the necessary or functional characters of particular forms have given way to decorative modifications. Pure ornament is a feature not essential to the vessel. Its ideas may be expressed by three principal methods: by relieved, by flat, and by intaglio figures.

Relief ornament was not extensively employed by the ancient Pueblos. The forms are few and simple, and nearly all are traceable to constructional or to functional features. Thus the ornamental crenulated surface of the coiled ware is constructional, consisting as it does of ridges, resulting from the method of building. The knobs, isolated coils, and festooned fillets are probably, in some cases, atrophied forms of handles.

Intaglio decoration is still more rare. It consists of incised, impressed, and punctured figures. No designs of importance are produced by this method, the most notable being the simple patterns traced by the finger or a sharp implement upon the relieved edges of fillets in the coiled ware.

With these people, the highest class of decoration consisted of designs in color. This topic is fully discussed in a subsequent section.

Origin of ornament.—It is probable that before pottery came into use the decorative art had been cultivated in other fields, and we shall need to look both to nature and to antecedent arts for the originals of many decorative ideas.

From a remote period man has been able to appreciate beauty. The first exercise of taste would probably be in the direction of personal adornment, and would consist in the choice of colors or articles thought to enhance attractiveness, or in the grouping and modification of objects at first functional in character. Later, taste would be exercised on a variety of subjects, and finally it would extend to all things in use. Man may have recognized the comeliness of the first simple articles employed in his humble arts, but when he came to attempt the multiplication of these articles artificially, utility was probably the only thought. In reproducing them, however, non-essential features would be copied automatically, and the work of art would through this accident inherit purely ornamental attributes.

Thus it appears that the first ideas of decoration do not necessarily originate in the mind of the potter, but that, like the shapes of art products, they may be derived, unconsciously, from nature. This is an important consideration. At a later stage new forms of ornament are derived in a like manner from constructional features of the various arts. Invention of decorative motives is not to be expected of a primitive, tradition-following people. Advance is greatly by utilization of accidents.

USE.—A satisfactory classification of this pottery by functional characters will be most difficult to make. In the early stages of its manufacture it was confined chiefly, if not solely, to the alimentary arts. A differentiation of use would take place when certain vessels were set aside for special departments of the domestic work. Thus we would have vessels for eating, for cooking, for carrying, and for storage. When vessels came to be used in superstitious exercises, certain forms were probably set aside for especial ceremonies. With some peoples, particular forms were dedicated to mortuary uses, but we have no clew to any such custom among the ancient Pueblos, as the same vessel served for food both before and after death, and cinerary vessels were not called for. Certain classes of the ruder and plainer ware are found to be blackened by smoke. These were evidently cooking vessels. The painted pottery rarely shows evidences of such use. Bowls were probably employed chiefly in preparing and serving food. The larger vessels were devoted to carrying and storing water, fruits, grains, and miscellaneous articles. Smaller vessels were used as receptacles for paint, grease, and the like. The ancient people had not yet devoted their ceramic art to trivial uses—there are no toys, no rattles, and no grotesque figures.

CLASSIFICATION.—In treating a subject covering so wide a field, and embracing such a diversity of products, a careful classification of the ma-

terial is called for. Three grand divisions of the ceramic work of this province may be made on a time basis, namely: prehistoric, transitional, and modern. At present I have to deal chiefly with the prehistoric, but must also pay some attention to the transitional, as it embraces many features common both to the archaic and to the modern art. In discussing the prehistoric pottery I find it convenient to consider it under the three heads, coiled ware, plain ware, and painted ware. This classification is unsatisfactory, as it is based upon somewhat imperfectly differentiated characters. The smooth vessel is in many cases a coil-built one with obliterated coils, and a painted vessel a smooth one with the addition of designs in color. Very little of the pottery was left plain, but the coiled and painted varieties are fully represented in every locality.

I place the coiled ware first because to all appearances it is the most archaic variety and one which is rarely made at the present day. I suspect that the pieces made by modern potters serve to supply the wants of the collectors rather than to meet the requirements of traditional art. Among the collections in the National Museum are found many crude attempts to manufacture this ware by potters who did not comprehend the secrets of its construction, or who thought to produce the coiled effect by the cheap device of scarifying and indenting the surface of a plain vessel.

Close relations are established between the coiled and the painted pottery, not only by the identity of materials, form, color, and time, but by the union of the two methods of finishing, the coiling and painting, in one and the same vessel, as may be seen in the examples given in in the following pages.

COIL-MADE WARE.

COILING.—The art of building vessels by means of coils of clay has been practiced by many widely separated communities, and is, therefore, certainly not peculiar to the ancient Pueblos. A careful study of the ceramic field shows considerable diversity in the treatment of the coil. The most striking variation, the employment of the coil as a means of embellishment, is, so far as my observation extends, peculiar to the Pueblo peoples. With others it is a feature of construction simply.

The preliminary steps are with all primitive potters in a general sense the same. The first care is to secure suitable clay and to have it properly purified and tempered. After this the treatment varies greatly.

Coiling of the Pueblos.—The ancient Pueblo potter rolled out long, slender fillets or ropes of clay, varying in width and thickness to suit the size and character of the vessel to be constructed. They were usually perhaps from one-fourth to one-half of an inch in thickness. When they were properly trimmed and smoothed the potter began by taking the

end of a single strip between his fingers and proceeded to coil it upon itself, gradually forming a disk, as shown in Fig. 217, which represents the base of a large vase from the San Juan Valley.

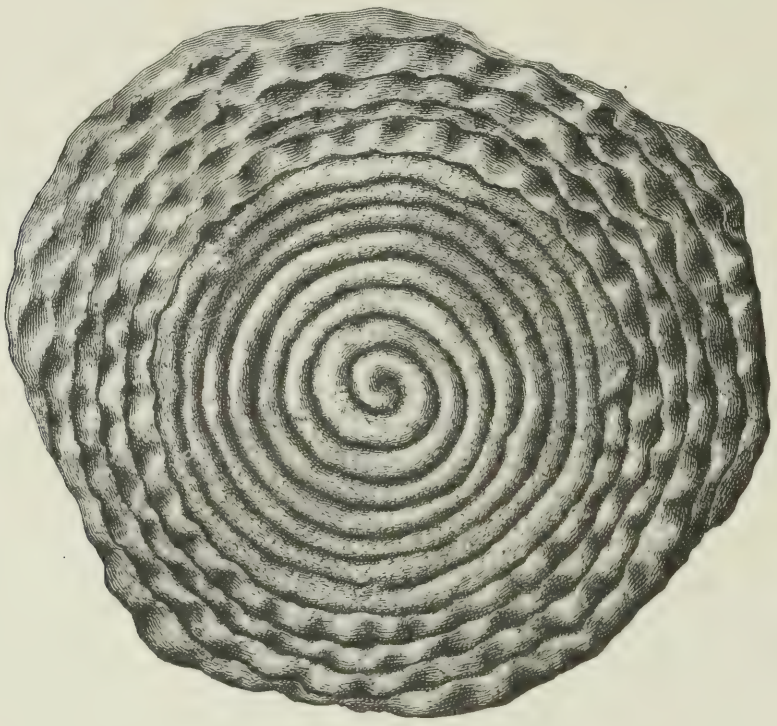


FIG. 217.—Beginning of the coil.

At first the fillets overlapped only a little, but as the disk grew large and was rounded upward to form the body of the vessel, the imbrication became more pronounced. The fillet was placed obliquely, as shown

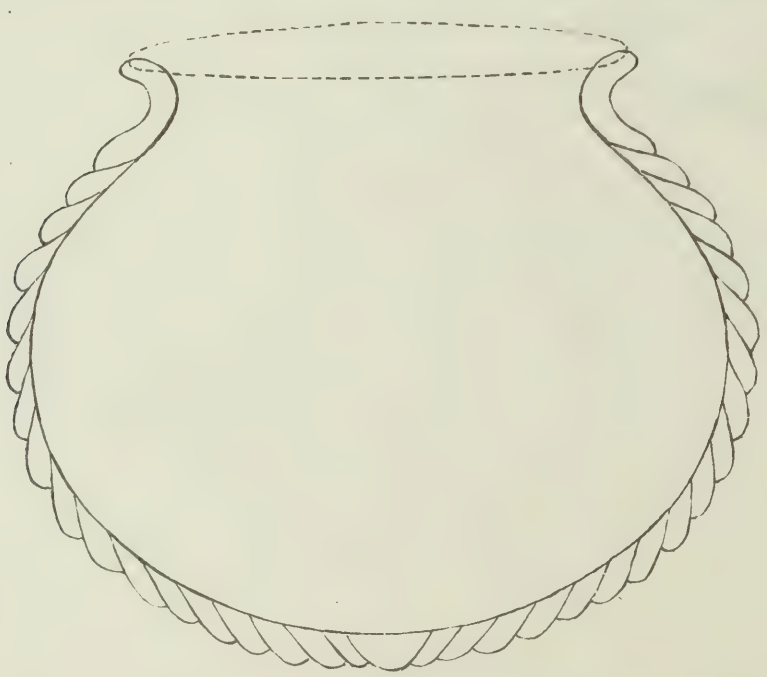


FIG. 218.—Section of coil-made vessel.

in the section, Fig. 218, and was exposed on the exterior side to probably one-half of its width. Strip after strip of clay was added, the ends

being carefully joined, so that the continuity might not be broken until the vessel was completed. The rim generally consisted of a broad strip, thickened a little at the lip, and somewhat recurved. The exterior imbricate edges were carefully preserved, while those on the inner surface were totally obliterated, first by pressure, and finally by smoothing down with an implement, or with the fingers, imprints of the latter being frequently visible. So thoroughly were the fillets pressed down and welded together that the vessels seldom fracture more readily along the lines of junction than in other directions.

The fact that the spiral ridges of the bottom are frequently without abrasion, as shown in Fig. 217, suggests an idea in regard to the manipulation of the coil. While building the upper part of the vase the base would necessarily rest upon some sort of support and the soft ridges would suffer from abrasion. In preventing such defacement, an interior support, such as a mold or the base of another vessel, must have been used, in which case the vessel was necessarily built in an inverted position. At the same time it is clear that this would be practicable only with bowls or with very wide-mouthed vessels, as the mold, if rigid, could not be removed through a restricted aperture.

In pressing the coil down, in welding it to the preceding turn, internal support would be necessary, as otherwise the strain would warp the walls. A curved trowel or a rounded pebble could be used as long as the aperture would admit the hand, but no support excepting the fingers, or an implement shaped for the purpose, could be used beyond this stage. The whole process was a most delicate one, requiring patience and skill. In this respect it contrasted strongly with the coiling of other peoples. As indicated by numerous specimens, the coil was sometimes laid on the inside of a shallow basket or bowl, the surface of the vessel showing a combination of basket-markings and nearly obliterated spiral creases. This device served a good purpose in starting the vessel, the upper part being completed by free-hand coiling.

Coiling of other peoples.—The art, as practiced by the Indians of Louisiana, is graphically described by Dumont. The following paragraph is translated from his work:

"Moreover, the industry of these (savage) girls and women is admirable. I have already alluded to the skill with which, with their fingers only, and without a wheel, they make large pieces of pottery. The following is their method of work: After having collected a quantity of the proper kind of earth, and having cleaned it thoroughly, they take shells which they break up and reduce to a very fine, loose powder; they mix this fine dust with the earth which they have collected, and, moistening the whole with a little water, work it with their hands and feet into a paste, from which they make rolls six or seven feet long and as thick as they may desire. If they wish to make a dish or a vase, they take one of these rolls by the end, and marking on this lump with the thumb of the left hand the center of the vessel, they turn the roll

around this center with admirable rapidity and dexterity, describing a spiral. From time to time they dip their fingers into the water, which they are always careful to have near them, and, with the right hand, they flatten the inside and the outside of the vase, which without this would be uneven. In this way they make all kinds of earthen utensils, dishes, plates, bowls, pots, and jugs, some of which hold as much as 40 or even 50 pints. This pottery does not require much preparation for baking. After having dried it in the shade, they make a large fire, and as soon as they think they have enough embers they clean a place in the middle, and, arranging the pieces of pottery, cover them with charcoal. It is thus that the pieces are given the necessary heating (cooking), after which they are as strong as our pottery. There is no doubt but that we must attribute their strength to the mixture which these women make of powdered shells with the earth which they employ."[1]

Professor C. F. Hartt has furnished many facts in regard to the manufacture of pottery by the Brazilian Indians. According to his account the women of Santarem model the bottom of a vessel from a lump of clay in the usual way. Then "a piece of clay is rolled under the hand into a long, rope-like cylinder. This rope is then coiled around the edge of the bottom of the vessel, being flattened sidewise by pinching with the fingers of the left hand, and caused to adhere to the bottom. On this, coil after coil is laid in like manner, each being flattened as before. After a few have been added they are worked into shape with the fingers, which are occasionally moistened in water, and the irregularities produced by the coils are caused to disappear. The vessel is formed by the hand alone and the surface is smoothed down by means of a bit of gourd or a shell, which is from time to time dipped in water. If the vessel be large it is now set away in the shade for a while to dry a little, after which new coils are added as above, no other instrument being used except the hands and the gourd or shell, with which alone the vessel may receive not only an extremely regular form, but also a very smooth surface. * * * The coils are so worked together that from a simple inspection of the vessel it is impossible to determine how it was built up. I should never have suspected that the pottery of Pacoval had been made by coiling, were it not that I found the coils still ununited on the inner surface of the heads of idols."[2]

Prof. Hartt states, also, on the authority of Dr. de Magalhaes, that the pottery of the several tribes of the Araquaya River is always made by coiling, the surface being worked down by the hand and water and the aid of a spoon-like trowel made of bamboo. Humboldt makes a similar statement in regard to the tribes of the Orinoco.

Mr. E. A. Barber[3] relates, on the authority of Captain John Moss, a resident, for a long time, of southwestern Colorado, that the Ute In-

[1] Mémoires sur la Louisiane. Butel-Dumont. Vol. II, pp. 271–273. Paris, 1753.
[2] Hartt: American Naturalist, February, 1879, pp. 83–86.
[3] Barber: American Naturalist, Vol. X, p. 412.

dians manufacture pottery at the present time, and that they probably follow the methods of the Mokis, from whom they learned the art.

Captain Moss states that "They use marl, which they grind between two rocks to a very fine powder. They then mix this with water and knead it as we would dough. Afterwards they roll it out into a rope-like state about one inch in diameter and several yards in length. They then commence at the bottom of the jar, or whatever vessel they may be making, and coil the clay-rope layer on layer until they have the bottom and three inches of the sides laid up. The tools for smoothing and joining the layers together are a paddle made out of wood and perfectly smooth, and an oval-shaped polished stone." Both of these tools are dipped in the water (salt water is preferred), the stone is held in the left hand and on the inside of the vessel, and the paddle is applied vigorously until the surfaces are smooth. The method thus described by these authors was, probably, almost universally practiced.

I have specimens from a number of the Eastern and Southern States that fracture along the line of junction, showing clearly the width of the fillets and the manner of their attachment. I picked up a small specimen at Avoca, North Carolina, which has broken along the line of junction, giving the section illustrated in Fig. 219. It will be seen that

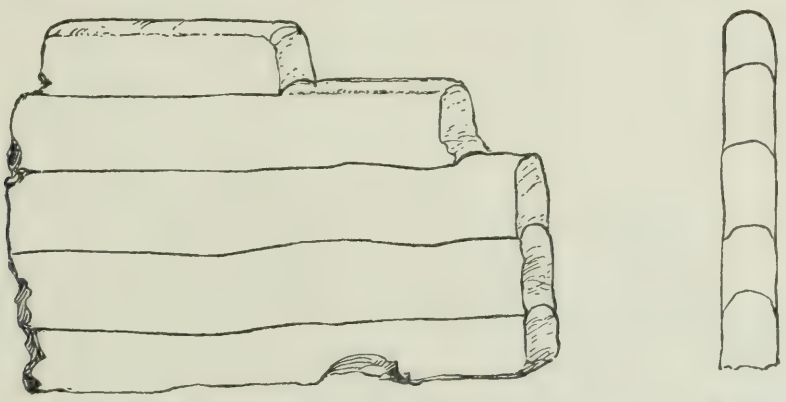


FIG. 219.—Ordinary superposition of coils. Section.

there is no overlapping as in the Pueblo work, the attachment being accomplished by pressure and by drawing both edges of the coil down over the convex edge of the preceding coil. I have similar specimens from the modern Pueblos, from Florida, from Mexico, and from Brazil. It will readily be seen that this method of building differs essentially from that practiced so successfully by the ancient Pueblos.

ORIGIN OF THE COIL.—This use of the coil is but a refinement of the most simple possible method of construction, that of building by the addition of small masses of clay. A disk or shallow cup can be formed successfully by the fingers alone from a single lump of clay, but to carry the wall upward by pressure or by blows from a paddle would result in a weak, frayed edge. To counteract or prevent this tendency small elongated masses are used, which are laid one upon another along the growing margin. From this, in the most natural manner possible,

we arrive at the use of the long, even rope or fillet. The imbrication or overlapping of the coil practiced by the Pueblos may have originated in the effort to secure a more stable union of the parts which had to be welded together by pressure. It would also almost necessarily arise from the attempt to lay the coil upon or within a mold or support. There is a possibility that it may have been suggested by features of construction observed in other arts—the overlapping parts of a roof, of a plate or scale garment, or of a coiled basket. The latter is especially suggestive, since we must generally look for the origin of features of the ceramic art in the features of closely associated arts.

THE COIL IN ORNAMENTATION.—Ordinarily the coil has not been expected to contribute to the beauty of the vessel, but the Pueblo tribes made it a prominent feature in decoration. The primitive potter as he laid his rude coils noticed that the ridges thus produced served to enhance the appearance of the vessel. He also observed that the series of indentations left on the outer surface of the fillet in pressing it down gave a pleasing effect, and made use of the suggestion. Improving upon the accidents of manufacture, he worked out a variety of decorative devices.

In some cases the coiled ridges are confined to particular parts of the vessel, the other parts having been worked down or originally constructed by plain modeling. Numerous examples have the body quite plain, the collar alone retaining the spiral ridges of the coil. Fig. 251 illustrates a very good example of this peculiarity.

FIG. 220.—Coiled and plain surface. Section.

The fragment shown in Fig. 220 is from the neck of a pot-shaped vase. The surface has been plain below and the fillets of the upper part have been pressed down evenly with the thumb, leaving the extreme edge of the overlapping band in sharp relief, as shown more clearly in the section.

The whole coil is sometimes left plain, as in Figs. 221 and 222, in which cases the edges have been carefully pressed down and smoothed with the fingers.

A great variety of devices were resorted to to diversify and decorate the ribbed spirals, and in this the innate good taste of the Indian ex-

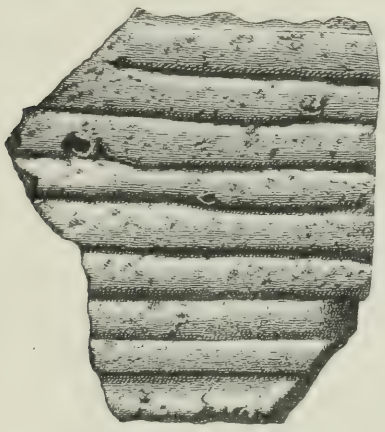


FIG. 221.—Rib-like coil.

Section

hibits itself to much advantage. The coil is often indented or crimped throughout, from the center of the bottom to the rim of the vessel. At times a few turns at the beginning are left plain, as shown in Fig. 217,

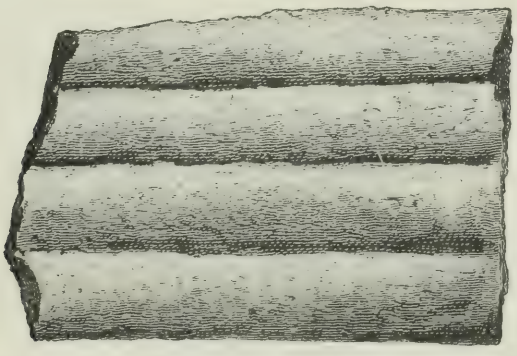


FIG. 222.—Rib-like coil.

Section.

while again alternate bands, consisting of several turns each, are not crimped, as clearly brought out by an example from Southern Utah, illustrated in the Art Review for July, 1874, by F. W. Putnam, and also by two fine specimens recently collected by E. W. Nelson near Springerville, Arizona.

The decided taste of this ancient people for ornament is still further indicated by attempts to elaborate more intricate patterns by means of thumb-nail indentations. The idea may have been borrowed from basketry. The fragment given in Fig. 223 illustrates the method of procedure. We have some very fine vessels of this class from Springerville, and others from the province of Tusayan in which the entire surface is covered with checkered or meandered patterns. An excellent

example is shown in Fig. 253. We shall appreciate the cleverness of this work more fully when we remember that the separate thumb inden-

FIG. 223.—Indented pattern.

tations forming the figures of the pattern are made in each coil as it is laid and pressed into place and before the succeeding turn is made.

These curious decorative effects were still further elaborated by diversifying the character of the indentations of the coil. In Fig. 224

FIG. 224.—Nail indentations.

we have a most successful effort in this direction. The fillets are alternately crimped and plain. The thumb, in pressing down the one, has

been applied with such force that the nail has cut entirely through it, indenting the plain layer below and causing the two to coalesce. This specimen was obtained from the cañon of the Rio Mancos.

Certain districts are particularly rich in remains of this peculiar ware and furnish many examples of crimped ornament. The remarkable desert-like plateau lying north of the Grand Cañon of the Colorado contains many house and village sites. At intervals along the very brink of the great chasm we come upon heaps of stones and razed walls of houses about which are countless fragments of this ware. These are identical in nearly every character with the pottery of Saint George on the west, of the San Juan on the east, and of the Gila on the south. A few miles south of Kanab stands a little hill—an island in the creek bottom—which is literally covered with the ruins of an ancient village, and the great abundance of pottery fragments indicates that it was, for a long period, the home of cliff-dwelling peoples. In no other case have I found so complete an assortment of all the varieties of coil-ornamentation. All the forms already given are represented and a number of new ones are added.

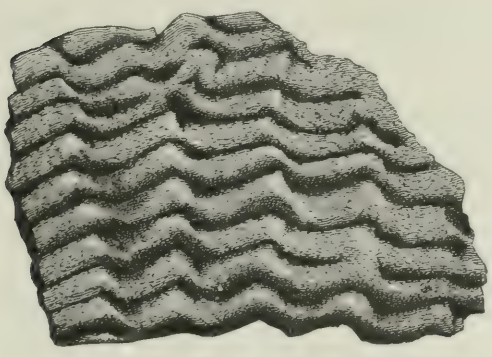


FIG. 225.—Wave-like indentation.

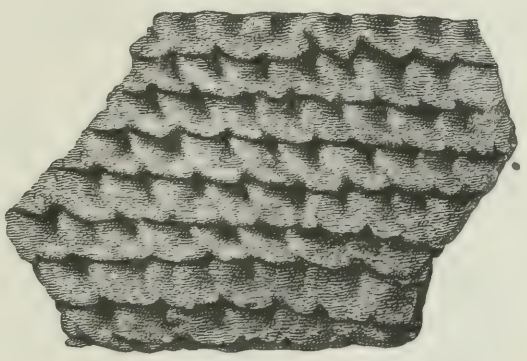


FIG. 226.—Wave-like indentation.

In the example given in Fig. 225 the fillets are deeply indented, giving a wave-like effect. Another pretty variety is seen in Fig. 226.

One of the most successful of these archaic attempts at relief embellishment is illustrated in the fragment shown in Fig. 227. The raised edge of the fillet is pinched out at regular intervals, producing

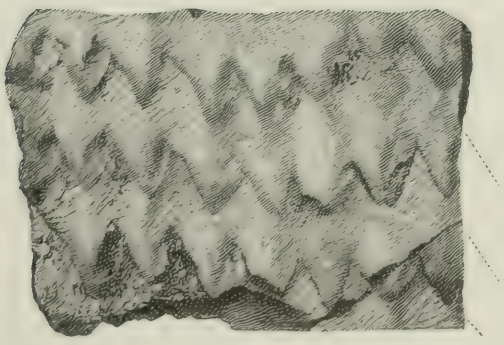


FIG. 227.—Impressions of finger-tips.

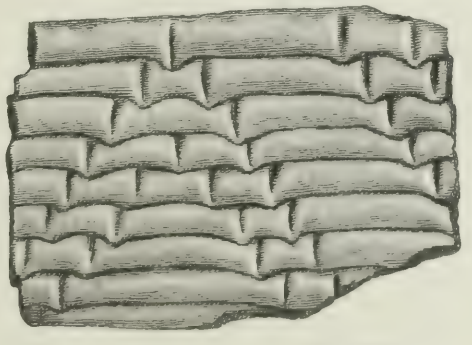


FIG. 228.—Implement indentations

rows of sharp-pointed "beads." Over the entire surface impressions of the fine lines of the finger-tips are still distinctly visible. The dotted lines show the direction of the coil.

The indenting was not always done with the thumb or finger-tips, but a variety of implements were used. The vase, of which Fig. 228 shows a small fragment, had a figure worked upon it by indenting the soft coils with a sharp implement.

The coil ridges were sometimes worked down into more regular forms by means of an implement and were left plain or were interrupted by transverse lines. Lines of nail marking are shown in Fig. 229. These lines are occasionally combined in rude patterns.

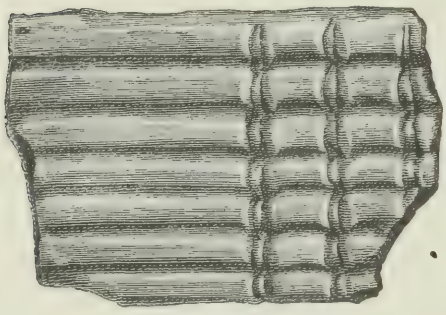


FIG. 229.—Nail markings.

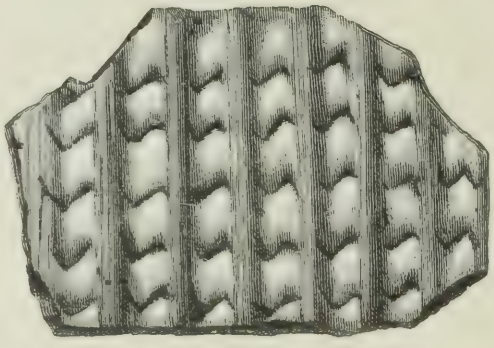


FIG. 230.—Incised lines

In the specimen illustrated in Fig. 230, incised lines are drawn across the ridges of the coil.

OTHER VARIETIES OF ORNAMENT.—I have already remarked that certain styles of decoration are confined to somewhat definite geographic limits. In the ancient Pueblo district we find that painted designs and coil ornaments are co-extensive, while within this area there are but rare examples of incised designs, stamped figures, or cord-marking. We find basket indentations, but these are in all cases the accidents of manufacture. The coil has often been laid upon the inner surface of a basket.

FIG. 231.—Incised pattern.

The fragment shown in Fig. 231 was picked up on the site of an ancient Pueblo village near Abiquiu, New Mexico. It is a portion of the neck and upper part of the body of a small vase which was covered by a simple pattern of intaglio lines, produced with a bone or wooden stylus.

Ornaments in relief, aside from the coil and forms resulting directly from its use, were sparingly employed and are of comparatively little interest. They consist of straight, curved, or crimped fillets, applied to the surface of the vessel as shown in Fig. 232. Additional examples are given in Figs. 233, 234, and 235.

Nodes, cones, and other forms are also used as seen in Figs. 236, 237, and 238. These are usually placed about the neck of the vessel, occupying the places of the handles.

MATERIAL.—The clay used in this ware was in some sections tempered with a large percentage of rather coarse silicious sand, which gives to the surface a rough, granular look. In the south the paste seems to be finer grained than in the northern districts.

COLOR, ETC.—The color of the paste is generally gray, but in the province of Tusayan it is frequently yellow. In some cases the surface has received a wash of fine liquid clay, and a few bowls from the Little Colorado and Gila Valleys have designs in white paint covering the exterior surface. This ware is always well baked and extremely hard.

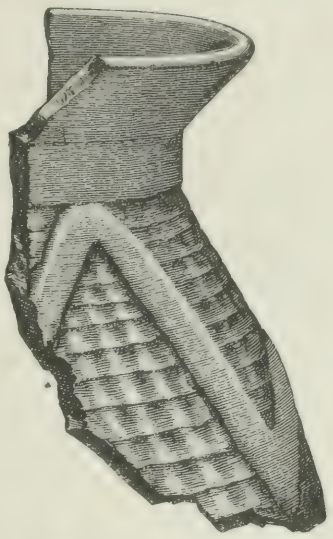


FIG. 232.—Applied fillet.

FORM.—The forms are not nearly so varied as are those of the painted ware. The leading variety is a round-bodied, wide-mouthed olla or pot, with flaring rim. Bottles are of rare occurrence, and bowls are not nearly so plentiful as in other varieties of pottery. Life and eccentric

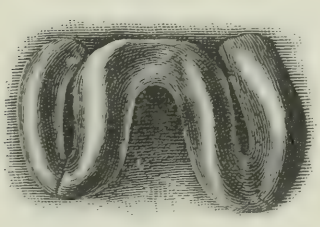


FIG. 233.

FIG. 234.

FIG. 235.

FIG. 236.

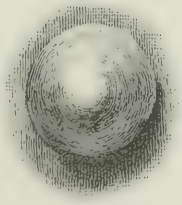


FIG. 237.

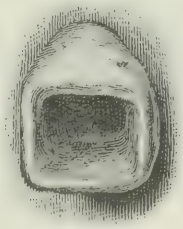


FIG. 238.

Examples of relief ornaments.

forms are occasionally found. Many small vessels of the more elongated shapes are furnished with handles, which are in most cases placed vertically upon the neck, and consist of single or double bands or ropes or of two or more strands twisted together.

USE.—As a rule the forms are such as have been devoted by most peoples to culinary uses, and in many cases the entire exterior surface is coated with soot. Plain vessels of similar outlines are used by the modern tribes of this province for cooking and serving food. Exam-

ples having very neatly or elaborately finished surfaces have apparently not been used over a fire. Those of large size doubtless served for the transportation and storage of water.

ILLUSTRATIONS OF VESSELS.

As it is my desire to give this paper something of a monographic completeness, I shall present a typical series of the best preserved vessels of this class along with some notices of the circumstances under which they were discovered. The treatment by districts or localities is for convenience simply, and has no reference to distinctions in the character of the ware.

DISTRICT OF THE RIO SAN JUAN.

Our first expeditions into the land of the cliff-dwellers were full of interest. We were not, however, the first explorers. The miners of the silver-bearing mountains to the north had made occasional excursions into the sinuous cañons of the plateau district, and failing to bring back the coveted gold, told tales of the marvelous cities of the cliffs, and speculated upon discovering in the débris of ancient temples and tombs a portion of the fabled gold and jewels of the provinces of Cibola and Tusayan.

Notwithstanding our entire freedom from expectations in this direction, the thought gave color to our anticipations, and it was not an uncommon occurrence to hear, about the slumbering camp fire, half jocular references to the "great pots of gold moons" that some one had whispered might be hidden away in the inaccessible cliffs that overshadowed us.

I shall not soon forget the incidents connected with the discovery of a pair of fine water-jars—one of which is illustrated in Fig. 239. On the occasion of our first passage down the cañon of the Rio Mancos[4] I made the discovery of a group of fine cliff-houses on the south side, far up in the vertical walls. On our return I made it a point to camp for the night directly below these houses, although a dense growth of underbrush had to be cut away to give room for our beds by the side of the sluggish stream.

The two finest houses were set in shallow, wind-worn caves, several hundred feet above the valley. One was almost directly above the other, the upper being reached by a number of notches picked in the nearly vertical rock-face.

I had ascended alone and was busily engaged in studying the upper house and tracing the plans of its fallen walls, when I heard a voice echoing among the cliffs. Descending hastily to the lower house I found

[4]Tenth Annual Report U. S. Geological Survey of the Territories, p. 394.

that one of my men had followed me and was excitedly scratching with a stick among the debris of fallen walls. He had just discovered the rim of a buried pot, and was fairly breathless from the anticipation of "piles of moons." By the aid of my geologic hammer we soon had the upper part of the neck uncovered, but hesitated a moment with bated breath before venturing to raise the rough stone lid. But there was no treasure—only a heap of dust. I was content, however, and when by a little further search we came upon a second vessel, a mate to the first, the momentary shades of disappointment vanished.

These vessels had been placed in a small recess, where the falling walls had not reached them, and were standing just as they had been

FIG. 239.—Coiled vase from a cliff-house in the Mancos Cañon, Colorado.—$\frac{1}{3}$.

left by their ancient possessors. The more perfect one, which had lost only a small chip from the rim, I determined to bring away entire. This I succeeded in doing by wrapping it in a blanket, and by means of straps, slinging it across my back. I carried it thus for a number of days over the rough trails of the cañons and plateaus. The other, which was badly cracked when found, was pulled apart and packed away in one of the mess chests. It is now with its mate in the National Museum, perfectly restored.

The unbroken vessel is shown in Fig. 239 about one-third its real height. Its capacity is nearly four gallons. The clay is tempered with a large portion of sand, some grains of which are quite coarse. The color of the paste is a light gray, apparently not having been greatly changed by the baking. A few dark contact clouds appear on the sides of the body. The walls are quite thin for a vessel of its size and are of very uniform thickness. The entire weight hardly exceeds that of a common wooden pail of the same capacity. The mouth is wide and the rim, which is made of a plain rough band, is one inch wide and abruptly recurved. The vessel can hardly be said to have a neck, as the walls round gradually outward from the rim to the periphery of the body, which is full and nearly symmetrical. The narrow strands of clay have been coiled with something less than average care, the exposed surfaces being wide in places and in others very narrow. The thumb indentations have been carelessly made. Two small conical bits of clay are affixed to the neck as if to represent handles. These may have been intended for ornaments, but are as likely to owe their presence to some little superstition of the archaic artisans.

The companion vessel has also a capacity of about four gallons. Its form differs from that of its mate, being considerably more elongated above and having a more pronounced neck. The material is about the same, but the color is darker and the workmanship is superior. The surface is coated with soot, indicating use over a fire in cooking food or in boiling water. The coil was laid with a good deal of care and the indentation was done in a way to produce a series of sharp points along the margin of the coil. The interior of the rim was finished with a polishing stone. A small cord of clay was neatly coiled into a double scroll and attached to the narrowest part of the vessel, corresponding in position to the knobs in the other example. This ornament, though small, is nevertheless effective. Similar scrolls are found upon vases from many parts of the Pueblo Province.

It is an interesting fact that this vessel had been successfully mended by its owners. A small perforation near the base had been stopped by cementing a bit of pottery to the inside with clay paste. These vases were evidently the most important of the household utensils of the cliff-dwellers, especially as in this place water had to be carried, at least during a part of the year, from the creek five hundred feet below. It is probable that baskets and skins were sometimes used for carrying water, and that the earthen vessels were used as coolers, as are similar vessels among many primitive peoples. That they were used for carrying water up the cliffs is indicated by the fragments that lie upon the slopes and point out the location of houses invisible from the trails below.

A large fragment of a similar olla was picked up in the valley of Epsom Creek, southeast Utah. This vessel was larger, neater in finish, and more elegant in shape, than either of those described. A suffi-

ciently large fragment was discovered to show satisfactorily the character of the rim, the outline of the body, and the details of surface finish. (Fig. 240.) The rim is but slightly recurved and the neck is high and upright. The body swelled to a diameter of about eighteen inches at the greatest circumference. The paste, as usual, indicates a gray clay tempered with coarse sand. The inside is smooth and the walls are remarkably thin for so large a vessel, being about one-fourth of an inch in thickness. The coil is very neatly laid and indented, a variety to the effect being given by leaving occasional plain bands. This vessel is described by W. H. Jackson in the Bulletin of the U. S. Geological Survey of the Territories, Vol. II.

FIG. 240.—Part of a large vase from Epsom Creek, Utah.—$\frac{1}{8}$

Fragments of this class of ware are found throughout the cañoned region of southern Utah and for an undetermined distance into Nevada. I have already described fragmentary specimens from Kanab and therefore pass on to the west.

DISTRICT OF THE RIO VIRGEN.

The most notable collection of this coiled ware ever yet made in any one locality is from a dwelling-site tumulus near Saint George, Utah, nearly three hundred miles west of the Rio Mancos.

About the year 1875, the curator of the National Museum obtained information of a deposit of ancient relics at the above locality, and in 1876 a collector was sent out to make an investigation. The result, so far as collections go, was most satisfactory, and the account furnished gives an insight into the customs of this ancient people not yet obtained from any other source. On the Santa Clara River, a tributary of the Rio Virgen, about three miles from the Mormon town of Saint George, a low mound, which I suppose to have been a sort of village-site tumulus, was found. The outline was irregular, but had originally been approxi-

mately circular. It was less than ten feet in height, and covered about half an acre. One side had been undermined and carried away by the stream. The work of exhumation was most successfully accomplished by means of water. A small stream was made to play upon the soft alluvium, of which the mound was chiefly composed. The sensations of the collector, as skeleton after skeleton and vase after vase appeared, must have been highly pleasurable.

It is thought that the inhabitants of this place, like many other primitive peoples, buried their dead beneath their dwellings, which were then burned down or otherwise destroyed. As time passed on and the dead were forgotten, other dwellings were built upon the old sites, until quite a mound was formed in which all the less perishable remains were preserved in successive layers.

Following the customs of most primitive peoples, the belongings of the deceased were buried with them. Earthen vessels were found in profusion. With a single body, there were sometimes as many as eight vases, the children having been in this respect more highly favored than the adults. There seems to have been no system in the arrangement either of the bodies or of the accompanying relics.

The majority of the vases were either plain or decorated in color, but many of the larger specimens were of the coiled variety. About sixty vessels were recovered. Those of the former classes will be described under their proper headings.

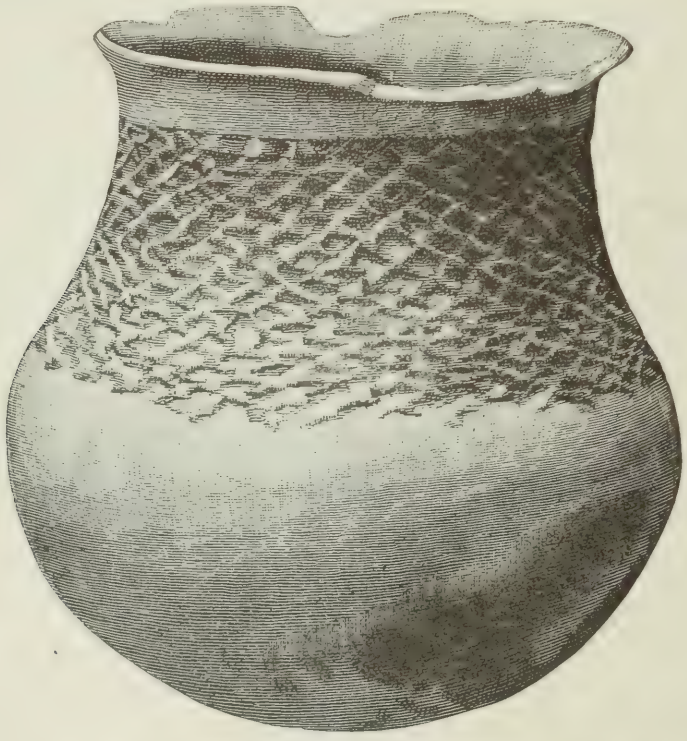


FIG. 241.--Vessel from the tumulus, at Saint George.—$\frac{1}{3}$.

The shapes of the corrugated vases are of the simplest kind. The prevailing form corresponds very closely with the Cliff House specimen illustrated in Fig. 239. One unusually large example was brought back in fragments, but has since been successfully restored. It stands

nearly seventeen inches high and is sixteen inches in diameter. The plain part of the rim is one and one-half inches wide, and the lip is well rounded and strongly recurved. The lines are quite graceful, the neck expanding below into a globular body which is just a little pointed at the base. The color is dark, from use over the fire. The fillets of clay were narrow and very neatly crimped. Roughly estimated, there were at least three hundred feet of the coil used. The vessel has a capacity of about ten gallons.

FIG. 242.—Vase from the tumulus at Saint George.—½.

Vases of this particular outline may be found, varying in size from these grand proportions to small cups an inch or two in height. Of a somewhat different type is the vessel shown in Fig. 241. The outline is symmetrical. The neck is comparatively high and wide and swells out gently to the widest part of the body, the base being almost hemispherical. A band about the neck is coiled and roughly indented, while the body is quite smooth. The plain band about the mouth is broad and sharply recurved. The coils are wide and deeply indented. They have been smoothed down somewhat while the clay was still soft. The vase shown in Fig. 242 is characterized by its upright rim, elongated neck, round body, and plain broad coils. The fillets are set one upon another, apparently without the usual imbrication. This latter feature occurs in a number of cases in the vessels of this locality.

The bottle given in Fig. 243 is quite comely in shape. The neck expands gracefully from the rim to its junction with the body, which swells out abruptly to its greatest fullness. The coil is not neatly laid. The indentation began with the coil, but was almost obliterated on the lower part of the vessel while the clay was yet soft. The fillets are not so well

smoothed down on the interior surface as usual, a ridged appearance being the result. This comes from the difficulty of operating within a much restricted aperture. The color is gray, with a few effective clouds

FIG. 243.—Vase from the tumulus at Saint George.—½

of black, the result of firing. Another, of similar form, was taken from the collection by unknown persons.

The only example of coiled ware from this locality having a handle is a small mug. Its body is shaped much like the larger vessels, but it is less regular in outline. The single vertically placed handle, now partially broken away, was attached to the side of the body near the top, and consisted of a rough cord of clay less than half an inch in diameter. The Saint George tumulus furnished a number of vessels with smooth, unpainted surfaces, very similar in form and size to the coiled vessels. They are generally blackened by use over fire, and, like the large coiled pots, were evidently used for culinary purposes. A few smaller vessels of the same style of finish exhibit forms characteristic of the painted ware, as will be seen by reference to the illustrations of these two groups.

From the same source we have two bowls of especial interest, as they have coiled exteriors and polished and painted interiors. One of these is illustrated in Fig. 244. They form an important link between the two varieties of ware, demonstrating the fact that both styles belong to the same age and to the same people. A similar bowl, found in possession of the Zuñi Indians, is illustrated in another part of this paper, Fig. 254. Another was obtained at Moki. Fragments of identical vessels

are found occasionally throughout the whole Pueblo district. One piece from the San Juan Valley has figures painted upon the coiled exterior surface, the interior being polished and unpainted. Specimens from the vicinity of Springerville, Arizona, have designs in white painted over

FIG. 244.—Bowl with coiled exterior and painted interior: Saint George.—½.

the coiled surface. A large number of well-made, hemispherical bowls from this locality have a coiled band about the exterior margin, but are otherwise plain and well polished. Some are brownish or reddish in color. Many of them have been used over the fire.

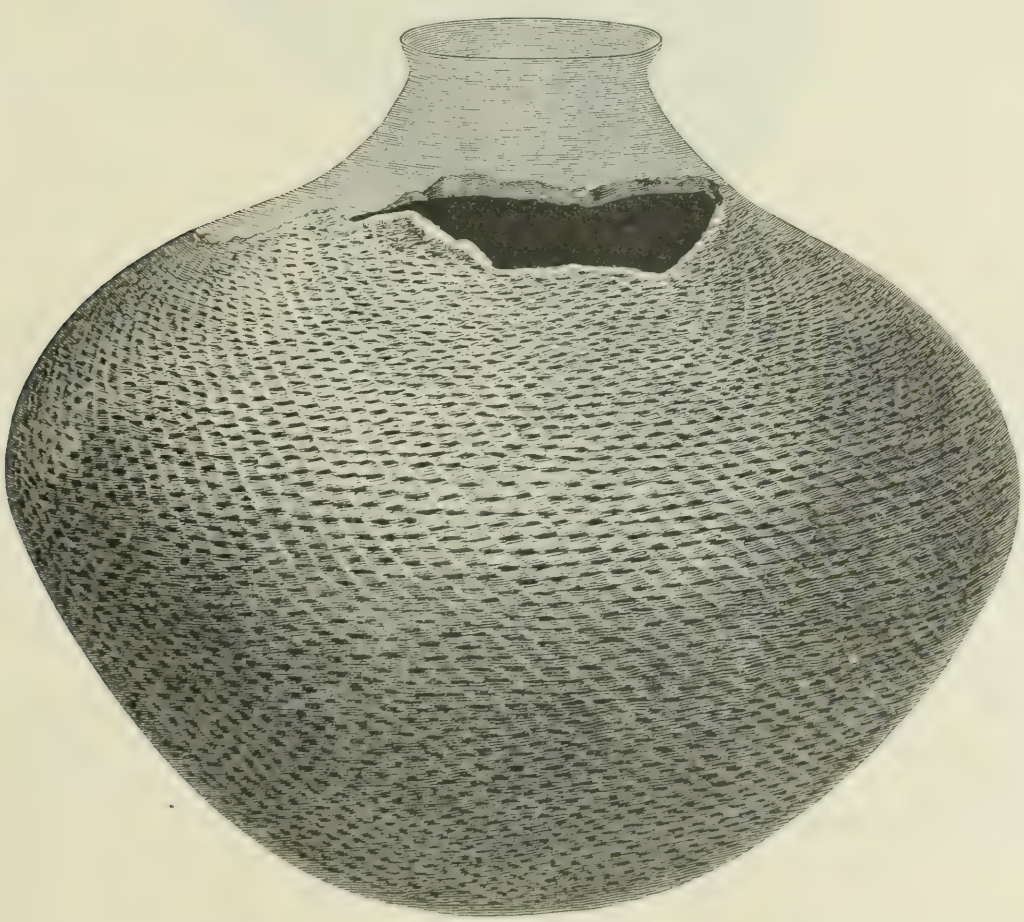


FIG. 245.—Vase from Parowan, Utah.—½.

The ceramic remains of Utah present some puzzling features. As we go north from the Rio Virgen there is an apparent gradation from the

typical Pueblo ware to a distinct group characteristic of Salt Lake Valley. The interesting problems suggested by this condition of things cannot be discussed in this place, and I will stop only to present a specimen of the coiled ware from Parowan, which is in some respects the finest example known. The form, so far as it is preserved, seems unusually graceful, and the laying and indenting of the coil is surprisingly perfect. This vase is in the Salt Lake Museum, and the cut, Fig. 245, is made from a photograph furnished by Prof. Marcus E. Jones. Vessels with similar finish have recently been obtained from graves at Fillmore, Utah, by Dr. H. C. Yarrow, and, singularly enough, identical work is seen in some very fine pieces obtained by Mr. Nelson from ruined pueblos in middle eastern Arizona.

FIG. 246.—Cup from central Utah.—½.

An interesting little cup, said to have been found in central Utah, illustrates some of the peculiar characters of the more northern examples of this ware. The vessel has apparently been built with coils, as usual, but the surface is worked over in such a way as to obscure the spiral ridges. The rim is upright and plain. The high, wide neck has a series of narrow, vertical flutings, made with a round-pointed implement, or possibly with the finger tip. A band of four channels encircles the middle of the body, the lower part of which is covered with oblique markings.

The handle is large and round, and is attached above to the top of the rim, and below to the middle of the body. This cup is now in the museum at Salt Lake. The photograph from which the engraving is made was obtained through Professor Jones.

DISTRICT OF THE LITTLE COLORADO.

The region now inhabited by the Pueblo tribes seems to have been a favorite residence of the ancient peoples. Ruins and remains of ceramic art may be found at every turn, and it is a common thing to

find ancient vessels in possession of the Pueblo Indians. This is especially true of the Zuñis and Mokis, from whom considerable collections have been obtained. These vessels have apparently been culled from the sites of ancient ruins, from cave and cliff-houses, and possibly in some cases from burial places. Recently, since they have become valuable in trade, the country about Moki has been ransacked by both Indians and whites, and many valuable specimens have been acquired.

Within recent years a number of expeditions have been sent into this region. To these the cañons and cliffs have yielded many specimens. Both Mr. Stevenson and Mr. Victor Mindeleff have brought in excellent examples, a few of which have already been illustrated in the publications of the Bureau of Ethnology. I must not fail to mention the very extensive collection of Mr. T. V. Keam and his associate, Mr. John Stephen, examples from which I am permitted to illustrate in this paper.

Most of the pieces described by Mr. Stevenson are small and not at all pleasing in appearance. They comprise ollas and handled mugs of an elongated scrotoid or sack shape, the widest part of the body being, as a rule, near the base, while the upper part is elongated into a heavy neck, to which a recurved rim has been added.

A number of examples, illustrated in the Second Annual Report of the Bureau of Ethnology, were obtained from the Zuñi Indians, and are thought by Mr. Stevenson to have come from the Cañon de Chelly.

FIG. 247.—Vessel from Zuñi.—¼.

A large, very badly constructed specimen is given in Fig. 247. The rim is roughly finished, the body unsymmetrical, and the bottom slightly flattened. The coils differ greatly in width, and are carelessly joined

and unevenly indented. The rudeness of workmanship noticed in this case is characteristic of many of the specimens from Zuñi.

FIG. 248.—Vessel from Zuñi. —$\frac{1}{2}$.

A rudely constructed cylindrical cup, of the wide-mouthed, narrow-bodied variety, is illustrated in Fig. 248. The bottom was flattened by contact with some hard, scarred surface before the clay hardened. Two

FIG. 249.—Handled mug from Tusayan.—$\frac{1}{2}$.

round, tapering, serpent-like fillets of clay have been fixed in a vertical position upon opposite sides of the vessel.

There are a number of handled vessels of this class. They are mostly rather rudely made and unsymmetrical. They are small in size and were probably devoted to ordinary domestic uses. A good specimen from the Keam collection is shown in Fig. 249. The handle in this case is a large loop made of three ropes of clay placed side by side. In one case there are three strands set side by side, and joined near the ends. In another case the strands have been twisted, giving a rope-like effect. These forms closely resemble wicker handles in appearance and manner of attachment, and are probably to some extent derived from them, although there is no reason why the ropes of clay, in constant use by potters, should not be joined in pairs, or even twisted, if greater strength or variety were desired.

Vessels from the province of Tusayan may often be identified by their color, which, like that of the transition and modern wares of the same region, is often a rich yellow, sometimes approaching an orange. This color is probably a result of changes in the natural constituents of the clay employed.

An excellent example of the yellow coiled vases is illustrated in Fig. 250. It has a new look, and probably belongs to a later period than the

FIG. 250.—Yellow vase from Tusayan.—⅓.

light gray ware of the district. It is symmetrical, and the coil is neatly laid and indented. Portions of the sides and base were blackened in firing.

There are a number of fine specimens of this class in the Keam collection, all obtained from the ancient province of Tusayan. A small, wide-necked pot is shown in Fig. 251. The surface is smooth, with the exception of a narrow band or collar about the neck, formed of a few indented coils. Other vessels closely resembling this in style are much larger and heavier.

A vessel of very archaic appearance is illustrated in Fig. 252. In form, color, and finish it differs from the preceding example. The

FIG. 251.—Yellow vase from Tusayan.—$\frac{1}{3}$.

mouth is almost as wide as the body at its greatest circumference, the color is gray, and the coils are narrow and regularly indented. A minute coiled fillet is attached to the rim for ornament.

FIG. 252.—Vessel from Tusayan.—$\frac{1}{3}$.

The vessel illustrated in Fig. 253 is one of the most noteworthy of its class. In form and construction it does not differ essentially from specimens already described, but the decoration is superior. The coils are indented in such a way as to produce a pattern of triangular figures, which is carried over the entire surface of the vessel. It belongs to the Keam collection, and comes from the province of Tusayan.

From Cibola we have a bowl, the exterior of which is coiled and the interior polished and painted. It is undoubtedly of the most archaic

FIG. 253.—Large vase from Tusayan.—¼.

variety of ware, and is almost a duplicate of the example from the Saint George tumulus, shown in Fig. 244. The interior is encircled by a

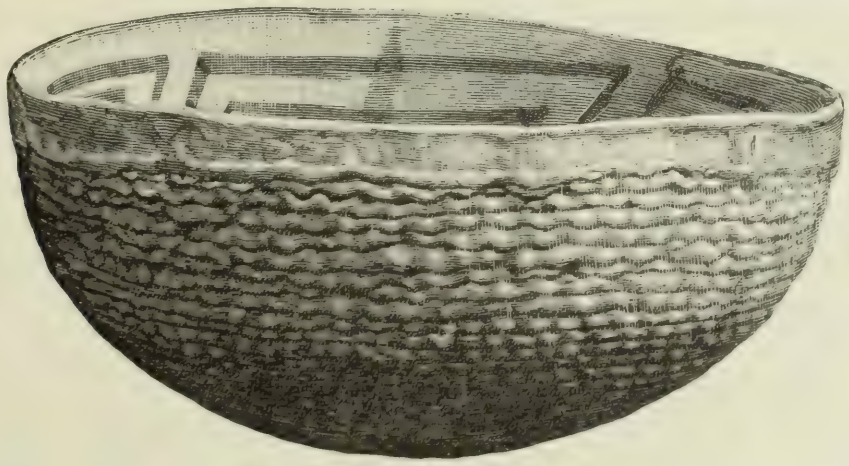


FIG. 254.—Bowl from Cibola.—½.

series of five triangular volutes in black lines, and the exterior exhibits a very neatly laid and indented coil. Fig. 254.

PECOS AND THE RIO GRANDE.

In New Mexico, upwards of four hundred miles east of Saint George, in the handsome upland valley of the Rio Pecos, we have the most easterly of the ancient Pueblo remains. The site was occupied at the time of the conquest, but is now wholly deserted, a small remnant of the people having gone to dwell with their kindred at Jémez.

The site of this village has been thoroughly examined by that learned gentleman, Mr. A. F. Bandelier. It is his opinion that the remains show at least two distinct periods of occupation, the first being marked chiefly by a stratum of ashes, pottery, etc., of great horizontal extent. This underlies more recent deposits which belong to the people found in possession, and whose arts are nearly identical with those of the existing Pueblos.

The underlying stratum is characterized by great quantities of fragmentary coiled ware uniform with that of more western localities. At the same time there is almost a total absence of painted pottery.

The conclusion reached by Mr. Bandelier is that probably the coiled pottery wherever found marks the occupancy of a people antecedent to those who made painted ware. It is my impression, as already stated, that the coiled form may be the most archaic of the ancient Pueblo pottery, yet I think it best to notice two things in regard to the conditions at Pecos.

In the first place, it should be remembered that the painted pottery found by Mr. Bandelier is said to resemble that of Nambe of to-day, nothing being said of the painted ware characteristic of the ancient ruins of the west, and which is always found associated with the coiled fragments, as at Saint George, in the same graves and even in the same vessel, Fig. 244. We would not expect in Pecos, or in any other place, to find modern Pueblo ware like the more recent pottery from Pecos intimately associated with the ancient ware either painted or corrugated. The only strange feature at Pecos is that the coiled fragments are not associated with ancient painted ware as in other places.

Mr. Bandelier advances the idea that this deposit of corrugated ware may represent the site of an ancient pottery, where the vessels were laid out in heaps surrounded by fuel and burned as by the modern Pueblo potters, the broken pieces being left on the ground, forming finally a considerable stratum. If this is correct, then the true explanation probably is that on this spot only the one variety of pottery was made, the painted pottery of the same locality, if such was in use, being made by potters in other parts of the village. Unless there is an actual superposition of the ancient painted ware upon deposits of the coiled variety, we learn nothing of chronological importance.

The valley of the Rio Grande has furnished but few specimens of the coiled ware, although it is known to occur along nearly its entire course through New Mexico.

DISTRICT OF THE RIO GILA.

The broad area drained by the Gila River and its tributaries abounds in ruins and relics, but its exploration is yet very incomplete. Coiled pottery identical, in nearly every respect, with that of the more northern valleys is abundant, but it is sometimes associated with painted wares very different in style from those of the cliff-house districts. It will probably be found that the ceramic products of the Rio Gila and the Rio Grande are much less homogeneous than those of the Colorado Chiquito, the San Juan, and the Rio Virgen.

IMITATION COIL-WARE.

I have already mentioned the occurrence in the Pueblo towns of modern coiled pottery, and also that there are seen, occasionally, vessels in which the coiled effect is rudely imitated by means of scarifying and indenting the plastic surface. Specimens of the latter class are generally small rude bottles with wide recurved lips and slightly conical bases. They are very rudely made and clumsy and are but slightly baked, and on account of the omission of proper tempering material are extremely brittle. They are new looking, and in no case show indications of use, and I have seen no example worthy of a place upon our museum shelves save as illustrating the trickery of the makers. It is possible that they are made by the Mokis, but if so by very unskilled persons who have neither understood the methods nor employed the same materials as the professional potters. I consider it highly probable that some clever Navajo has thought, by imitating archaic types of ware, to outwit collectors and turn an honest penny.

PLAIN WARE.

All the groups of pottery furnish examples of plain vessels. These are generally rudely finished and heavy, as if intended for the more ordinary domestic uses, such as the cooking of food and the storing of provisions and water. The material is coarser than in the nicely finished pieces and the surface is without the usual slip and without polish or applied color.

The characters of these utensils are quite uniform throughout very widely separated districts, so that it is more difficult to assign a single vessel to its proper family than in the case of decorated wares.

We have from Saint George and other localities examples of plain vessels that belong, without a doubt, to the coiled variety, the resemblance in material, color, shape, and finish being quite marked.

These vessels are plentiful in the province of Tusayan, and many of them, as indicated by their color, construction, and texture, belong to the yellow and orange groups of ancient coiled ware. There is in many cases an easily discernible gradation from the wholly coiled through the partially coiled to the plain ware. In some cases the coil has been so imperfectly smoothed down that obscure ribs encircle the vessel indicating its direction, and in other cases fractures extend along the junction lines, separating the vessel when broken, into its original coils. These vessels are large and heavy, with wide mouths and full bodies, which are occasionally somewhat compressed laterally, giving an oval aperture.

Similar pithoi like vessels are in daily use by the Mokis and also by the Zuñis, Acomas, Yumas, and others. They are employed in cooking the messes for feasts and large gatherings, for dyeing wool, and for storing various household materials. The modern work is so like the ancient that it is difficult in many cases to distinguish the one from the other.

Besides the typical pot or cask there are many varieties of plain vessels, some of which appear to be closely related to, or even identical with, the classes usually finished in color. These include bowls, pots, and bottles. I present three examples from the tumulus at Saint George, Utah. The little bottle, shown in Fig. 255, is remarkable in

FIG. 255.—Bottle from the tumulus at Saint George.—½.

having a subtriangular shape, three nearly symmetrical nodes occurring about the most expanded part of the body. An interesting series of similar vessels has been obtained from Tusayan, some of which are decidedly askoidal in shape.

Similar to the last in general outline is the curious vessel given in Fig. 256. It was obtained in Southern Utah, and is now in possession of the Salt Lake City Museum. The three nodes are very prominent and curve upwards at the points like horns. An upright handle is attached to the side of the neck.

A large bottle-shaped vessel from the same locality is illustrated in Fig. 257. The neck is short and widens rapidly below. The body is large and globular, and is furnished with two small perforated ears

FIG. 256.—Vase from the tumulus at Saint George.—½.

placed at the sides near the top. There are a number of similar examples in the collection from this place. We have also a number of handled cups, mostly with globular bodies and wide apertures. All are quite plain.

FIG. 257.—Vase from the tumulus at Saint George.—⅓.

Examples from this and other sections could be multiplied indefinitely, but since the forms are all repeated in more highly finished pieces it is needless to present them.

PAINTED WARE.

PRELIMINARY REMARKS.—It is with a peculiar sense of delight that we enter upon the study of a group of art products so full of new and interesting features. Every object of antiquity has its charm for us, but there is an especial fascination about the works of a people like the "cliff-dwellers," whose long forgotten history takes the form of a romance in our imaginations. In the study of these relics we have the additional charm engendered by a contemplation of new forms of beauty, and we follow the stages of their evolution from the initial steps to the end with ever increasing zest.

The ceramic art of classic and oriental countries has exerted a powerful influence upon existing culture, and is therefore much nearer the heart of the general student than the work of the American races; but it will not do for science to underrate the value of a study of the latter. Its thorough examination cannot fail to furnish many illustrations of the methods by which arts grow and races advance in culture, and, supplemented by a study of the art of the modern peoples, it will serve to illustrate the interesting phenomena attending the contact of widely separated grades of art. In the introductory pages I have considered many of the technical questions of construction and ornamentation. Before entering upon detailed descriptions of the specimens, I desire to give a brief review of the subject of painted decoration.

COLOR OF DESIGNS.—The colors employed are doubtless generally of a mineral character, although carbonaceous matter derived directly from vegetable sources may have been used to some extent. They comprised white, black, red, and various shades of brown, and were applied to the surfaces of the vessels by means of brushes not inferior in efficiency to those employed by the potters of more enlightened races.

EXECUTION.—The technical skill of the artist has not generally been of a high order, although examples are found that indicate a trained eye and a skilled hand. The designs are painted upon the show spaces of the vessels, which have been tinted and polished with especial reference to their reception. Large apertured vessels, such as dishes, cups, and bowls, are decorated chiefly upon the inner surface. The design often occupies only a band about the rim, but not infrequently covers the entire inner surface. High or incurved rims have in some cases received figures upon the exterior margin.

Vessels with constricted necks have exterior decorations only. The placing of the designs was governed, to a great extent, by the contour of the vessel, although there was no fixed rule. The grouping of the figures is possibly a little more irregular in the more archaic forms, but in nearly all cases there is a tendency toward arrangement in zones horizontally encircling the vessel. This feature is suggestive of the use of

the wheel or of the influence of wheel-made decoration; but there is probably a pre-ceramic reason for this peculiarity, to be sought in the decoration of antecedent vessels of more pronounced surface or constructional characters, such as basketry. This arrangement may also be attributed in a measure to the conformation of the vessel decorated. It will be observed that generally the neck furnishes the space for one zone of devices and the body that for another, while the shoulder, where wide or particularly accentuated, suggests the introduction of a third. In vessels of irregular form the figures take such positions as happen to have been suggested to the decorator by the available spaces, by the demands of superstition, or the dictates of fancy pure and simple.

It appears that the artist never worked in a hap-hazard manner, yet never by rule or by pattern. The conception of the intended design was well formed in the mind, and the decoration commenced with a thorough understanding of the requirements of the vessel under treatment and of the effect of each added line upon the complete result. The vessels, being for the most part free-hand products, are necessarily varied in form and proportion, and the mobility of method in decoration is therefore a necessary as well as a natural condition. In accommodating the ordinary geometric figures to the variously curved and uneven surfaces, there were no erasures and, apparently, no embarrassments. This feature of the art shows it to be a native and spontaneous growth—the untrammeled working out of traditional conceptions by native gifts.

STAGES OF ORNAMENT.—In the transmission of a nation's art inheritance from generation to generation, all the original forms of ornament undergo changes by alterations, eliminations, or additions. At the end of a long period we find the style of decoration so modified as to be hardly recognizable as the work of the same people; yet rapid changes would not occur in the uninterrupted course of evolution, for there is a wonderful stability about the arts, institutions, and beliefs of primitive races. Change of environment has a decided tendency to modify, and contact with other peoples, especially if of a high grade of culture, is liable to revolutionize the whole character of the art. The manufactures of our modern tribes show abundant evidence of the demoralizing effect upon native art of contact with the whites. There are no such features in the prehistoric art.

First stage.—In the early stages of art the elements used in embellishment are greatly non-ideographic, and the forms of expression are chiefly geometric. The elements or motives are limited in number and are in a measure common to all archaic art. They embrace dots, straight lines, and various angular and curvilinear figures, which in their higher stages become checkers, zigzags, chevrons, complex forms of meanders, fretted figures, and scrolls, with an infinite variety of combination and detail. At the same time there is no confusion. The processes by which the parts are segregated are as well regulated as are the processes of natural

growth. This phase of decoration seems to be the prevailing one in the earlier stages of Pueblo art.

Second stage.—A second phase or stage is marked by the free introduction of ideographic devices of pictorial origin into decoration. These are drawn, to a great extent, from that most prolific source of artistic conceptions, mythology. This stage is the second in Pueblo art. The period or stage of culture at which such elements are introduced varies with different peoples. It is possible that ideographic and non-ideographic devices may enter art simultaneously. This is certainly to be expected in the ceramic art, which comes into existence rather late in the course of progress.

Third stage.—In strong contrast with the preceding stages is the state of modern Pueblo decoration. Contact with the whites has led to the introduction of life forms and varied pictorial delineations. These conditions belong to a stage in advance of the position reached in the natural course of growth. Ideographic, non-ideographic, and purely pictorial characters are combined in the most heterogeneous manner in the decoration of a single vessel. The decorator has ceased to work under the guidance of his instincts as a rule unerring, and now, like the mass of his more highly civilized brethren, he must grope in darkness until culture shall come to his aid with canons of taste—the product of intellect.

CLASSIFICATION OF WARE.—In the treatment of this great group, or rather collection of groups, of pottery a scheme of classification is the first thing to be considered. In glancing over the field we notice that a whitish ware, having a certain range of material, finish, form, and decoration, is very widely distributed, that, in fact, it is found over nearly the entire area known to have been occupied by the Pueblo tribes. We find, however, that within this area there are varieties of this particular group distinguished by more or less pronounced peculiarities of color, form, and ornament, resulting from dissimilarity of environment rather than from differences in time, race, or method of construction. This group is associated, in nearly every locality, with the archaic coiled ware, and together they are especially typical of the first great period of Pueblo art. Its makers were the builders of the cliff dwellings, of the round towers, and of countless stone pueblos.

Distinct from the preceding, and apparently occupying an intermediate place in time and culture between the primitive and the recent wares, we have a number of pretty well defined groups. At least two of these are peculiar to the ancient province of Tusayan. The vessels of one of these groups are noticeable for their rounded symmetrical bodies, their finely textured paste, and their delicate creamy shades of color. The designs are well executed and display unusual refinement of taste.

Another, and probably the more important variety, is characterized, first, by peculiarities of form, the body being doubly conical and the bottom deeply indented; second, by richness of color, orange and yel-

low tints prevailing; and, third, by the striking individuality and remarkable execution of the painted designs.

In the valley of the Little Colorado and extending southward to the Gila, we find remnants of a group of highly colored pottery differing from the preceding and, in many respects, from the widely distributed red ware of the north, specimens of which occur in connection with the white ware. The surfaces are painted red and profusely decorated in white, black, and red lines and figures.

Still another variety is obtained from this region. As indicated by collections from Saint John and Springerville, it consists greatly of bowls, the colors, forms, and decorations having decided points of resemblance to corresponding features of the cream-colored ware of ancient Tusayan. There are still other groups, probably of intermediary periods, whose limits are not yet well defined, examples of which are found in possession of the Pueblo Indians.

At Pecos the art was practiced long after the advent of the conquerors, and later specimens show the archaic decorative ideas worked out in Spanish glaze. The deserted pueblos of the Rio Grande furnish antique forms that show wide distinctions from the ancient wares of the west. Another variety peculiar to the southwest shows indications of having been carried down to the present in the work of the Indians of the Lower Colorado Valley. Each of these groups and such new ones as may be discovered will be made the subject of careful study.

The remainder of this paper will be devoted to a single group—the first mentioned in the preceding list.

WHITE WARE.

The coiled ware has already been presented in some detail. Most nearly related to it in material, form, color, and distribution is the archaic white ware, the pottery *par excellance* of the "Cliff-Dwellers." It is easily recognized, even from small fragments, whether found in the valley of the Colorado, of the Rio Grande, or of the Gila, although each locality has its slight peculiarities of texture, tint, shape, and ornamentation. As a rule the material is a fine-grained clay, tempered with fine sand, the surfaces of the vessels being coated with a thin wash of very fine white clay. The ware is nearly always well baked and hard, breaking with a saccharoidal, rarely with a conchoidal, fracture. The surface is, as a rule, well polished, but often slightly undulating. The color of the paste is generally gray within the mass and white upon the surface. Associated with the white ware in most localities we find a small percentage of red ware nearly identical in all save color with the white ware.

The forms are comparatively few and simple, a full, well-rounded body, as with the coiled ware, being a strong characteristic. The ornamentation is generally in black paint, exceptionally in red and white, and consists to a great extent of geometric figures, often rather rudely drawn. Very rarely we observe an attempt to delineate a life form—human or animal, never vegetable.

CLASSIFICATION BY FORM.—The ware of each province is conveniently presented in form-groups, beginning with the more simple shapes and advancing to the more complex.

BOWLS.—Bowl-shaped vessels have been in great favor with all the Pueblo peoples, and in ancient times, especially in the north and west, predominated very decidedly over all other forms. This is naturally a favorite shape with primitive peoples, as it is the most simple and probably that first developed. A long experience would be necessary for the evolution of narrow-necked or complex forms.

Our collections contain many examples of ancient bowls, perfectly preserved, but if this were not the case the shapes are so simple that it would be an easy matter to make satisfactory restorations from fragments. There is considerable diversity of outline, yet all may be conveniently classed under two heads: the hemispherical and the heart-shaped. The former are much more plentiful and were probably the favorite food vessels of the people. As a rule they are plain segments of spheres. The rims are, in rare cases, oval in outline, and a few are elongated at the ends.

Heart-shaped bowls are characterized by a somewhat conical base and a deeply incurved rim, sometimes much depressed about the contracted mouth. The forms are often elegant, and the painted designs are generally well executed and pleasing to the eye.

OLLAS.—Between bowls and pot-shaped vases or ollas there is but a step—the addition of an upright or recurving band forming a neck. In vessels of the latter class the body is almost universally globular, often tapering a very little below. Occasionally there is a slight flattening of the bottom and very rarely a concavity. The neck is seldom high, but varies greatly in size and shape. These vessels correspond to the water vases of the modern tribes.

BOTTLES.—Bottle-shaped vessels are very widely distributed. They differ from the ollas in one respect only—the necks are narrower and higher. They are rarely flattened, as are the modern Pueblo bottles known as canteens.

HANDLED VESSELS.—Smaller vessels of nearly all shapes are at times furnished with handles. The origin of certain forms of these has received attention in the introductory pages. They vary in style with the shape of the vessel to which they are attached. Bowls exhibit two well-marked varieties—a cylindrical form and a simple loop. Those of the former often imitate the handle-like neck of a gourd, and archaic specimens from various parts of the Pueblo province are so literally copied that the small curved stem of the gourd is represented. This feature in some cases becomes a loop at the end of the handle, serving to suspend the vessel, like the ring attached to our dipper handles. Specimens from the headwaters of the Colorado Chiquito have the ends of the handles modeled to represent the head of a serpents or other creatures. A loop sometimes takes the place of the cylindrical handle, and is at-

tached to the side of the bowl in a vertical or a horizontal position. It may be long or short, wide or narrow, simple or compound, and is not always evenly curved. In certain forms of cups the vertically-placed loop occupies the whole length of the vessel, suggesting well-known forms of the beer-mug.

High-necked cups, vases, and bottles have rather long, vertically-placed loops, giving a pitcher-like effect. These may consist of two or more strands placed side by side or twisted together. Rarely an animal form is imitated, the fore feet of the creature resting upon the rim of the vessel and the hind feet upon the shoulder. Perforated knobs often take the place of the loops, and unperforated nodes and projections of varied shapes are not unusual. Some of these, placed upon the upper part of the neck, represent the heads of animals.

A novel handle is sometimes seen in the ancient vases of Cibola and Tusayan. While the clay was still soft a deep abrupt indentation was made in the lower part of the vessel, sufficiently large to admit the ends of two or three fingers, thus giving a hold that facilitated the handling of the vessel. I have seen no looped handles arching the aperture of the vessel, as in the modern meal baskets of the Zuñis.

ECCENTRIC AND LIFE FORMS.—The simple potter of early Pueblo times seems barely to have reached the period of eccentric and compound forms, and animal and grotesque shapes, so common in the pottery of the mound-builders of the Mississippi valley, the Mexicans, and the Peruvians, are of rather rare occurrence. The last section of this paper is devoted to life and eccentric forms.

For convenience of treatment, the following illustrations will be presented by districts, beginning at the northwest.

ILLUSTRATIONS.

DISTRICT OF THE RIO VIRGEN.

Under the head of coiled pottery I have given a detailed description of the remarkable dwelling-site tumulus at Saint George, Utah, which has furnished such a complete set of the fictile works of the cliff-house potter, the first collection of importance known to have been made by exhumation. I will now present the painted ware and point out its very interesting local peculiarities. All the ordinary shapes are present excepting the olla. Vessels of this form are all of the plain or coiled varieties. The paste is gray and the surface color is usually a light gray. A small percentage of the vessels are painted or stained red. The designs are all executed in black, and are for the most part nicely drawn. They differ slightly in a number of ways from those of other districts, their relationships being, with a few exceptions, more

intimate with the ware of the Rio San Juan. A characteristic of this pottery is the thinness of the walls and the hardness and tenacity of the paste. In form a striking feature is the occurrence of bowls of oval form, and in one case such a bowl has sides cut down or scalloped and ends prolonged. The oval form is sometimes seen in other districts, and the elongation of portions of the rim is a feature especially characteristic of the Pima and Mojave work of to-day.

Bowls.—I have already shown in Fig. 244 a small bowl from this locality, in which a coiled exterior is combined with a polished and painted interior. This is an unusual combination, the exterior commonly being plain. The following examples are grouped, as far as possible, according to their painted designs. A usual and very widely distributed decoration consists of a belt of figures encircling the inner margin. In its simplest condition it is only a single broad line, but more frequently it is elaborated into a tasteful border so wide as to leave only a small circle of the plain surface in the bottom of the vessel. The figures present much variety of effect, but combine only a few elements or ideas, as the following figures will amply show. All are rectilinear, or as nearly so as the conformation of the vessels will permit. No example of exterior decoration occurs. As my illustrations are necessarily limited to a few pieces, those having the simpler combinations of lines are omitted, and such only are given as exhibit the decorations of this district to the best advantage.

The bowl shown in Fig. 258 may be regarded as a typical example.

Fig. 258.—Bowl: Tumulus at Saint George.—$\frac{1}{3}$.

It is a plain hemisphere of gray clay, with roughly finished exterior and whitened and polished interior surface. It is eight inches in diameter and nearly four inches deep. The painted design occupies a band about two inches wide, and consists of two broad bordering lines inclosing meandered lines. The triangular interspaces are occupied by serrate figures, giving to the whole ornament an appearance characteristic of textile borders.

Two small bowls have borders in which the meandered lines are in the natural color of the ground, the triangular spaces being filled in with

black. In one case the effect of the guilloche is given in the same manner.

Few vessels exhibit a more characteristic example of the ornamentation of this ware than that given in Fig. 259. It is identical in surface finish with the last, excepting that the exterior has been painted red. An exceptional feature may be noticed in the shaping of the rim, which has been brought to a sharp edge.

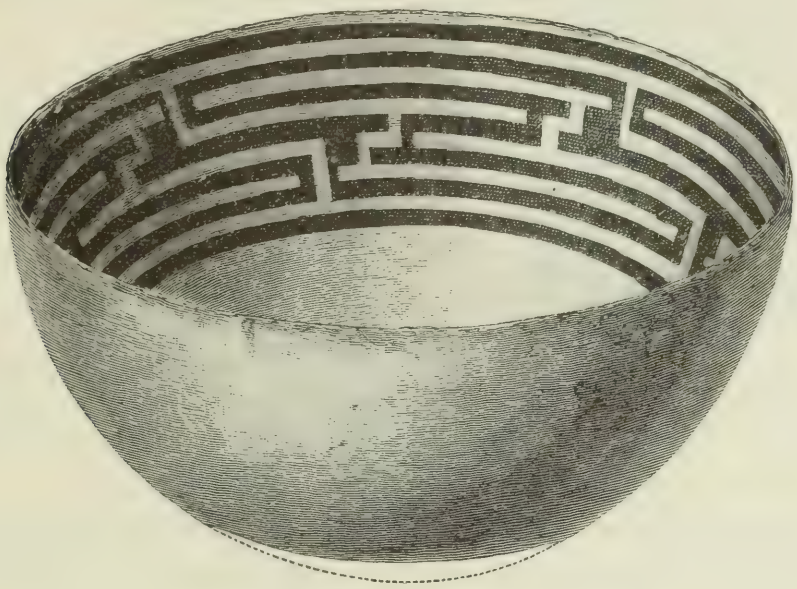


FIG. 259.—Bowl: Tumulus at Saint George.—⅛.

The design occupies the usual space, and consists of a very elaborately meandered or fretted line, which is so involved that the eye follows it with difficulty. Four units of the combination complete the circuit of the vessel. In another specimen, which also has the design divided into four parts, the lower line of each part is made straight, by which means the space left in the bottom of the vessel is square instead of round, as in the other cases.

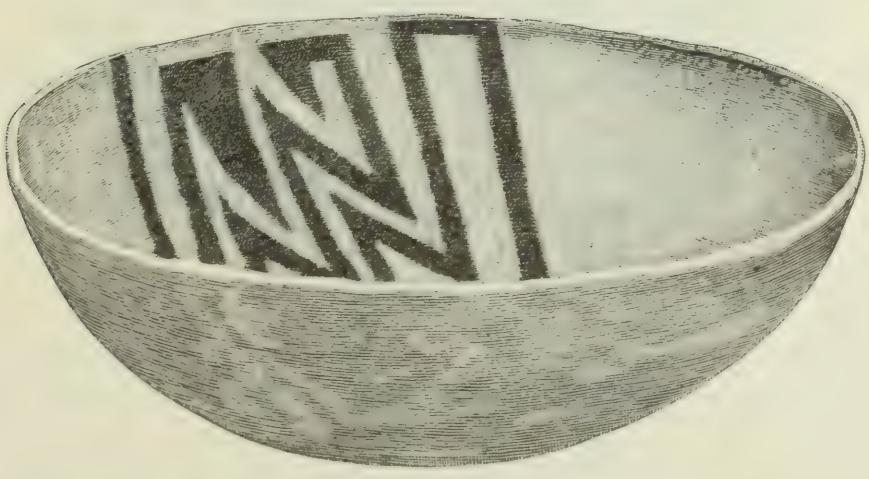


FIG. 260.—Bowl: Tumulus at Saint George.—⅛.

Another variety of decoration, quite characteristic of this region, consists of a band of fret-work dashed boldly across the inner surface

of the bowl, giving a most striking result. These figures appear to be fragments of continuous borders, taken from their proper connections and made to do duty on a surface that had ordinarily been left without decoration. This observation has led to the proper interpretation of many enigmatic combinations at first thought to have especial application and significance.

FIG. 261.—Painted device.

The handsome shallow bowl presented in Fig. 260 has been badly broken and carefully mended while still in the hands of its aboriginal owners. It is ten and one-half inches in diameter, and only three and three-fourths inches in depth. The surface finish is identical with that of the preceding example. The design, which consists of a single segment of a chain of fret-work, is drawn in broad, steady lines. Fig. 261.

Not unlike the last in its leading features is the vessel illustrated in Fig. 262. The label indicates that it was collected at Kanab, Utah, a Mormon village ninety miles east of Saint George. The design is carried over the whole inner surface, and is somewhat difficult to analyze. There is little doubt, however, that it consists of portions of fretted or meandered patterns arbitrarily selected from basketry or other geometrically embellished articles, and applied to this use. The complete device is shown in Fig. 263.

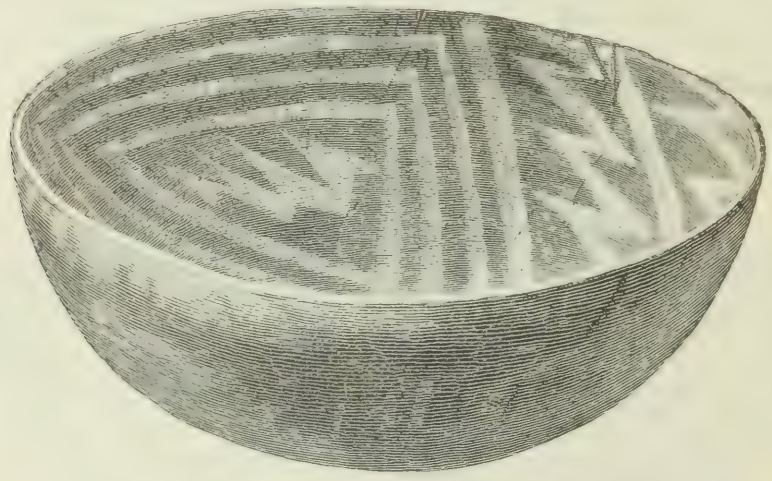


FIG. 262.—Bowl from Kanab.—$\frac{1}{4}$.

The following examples are unique in their styles of decoration. The first, Fig. 264, resembles the preceding save in its painted device. Like a few others, it has been badly fractured and carefully mended by its Indian owners. It was obtained also at Kanab, and is nine inches in

diameter by four and one-half in height. The design is cruciform in arrangement, the four parts being joined in pairs by connecting lines. It exhibits some very unusual features (Fig. 265), and we are led to suspect that it may in some way have been significant, or at least that it is a copy of some emblematic device.

FIG. 263.—Painted device.

The almost total absence of life forms in the art of the primitive Pueblos has often been remarked. One example only has been discovered in this region. This occurs in a subject painted on the inner surface of a rather rude, oblong, bowl, from the Saint George tumulus, Fig. 266. A checkered belt in black extends longitudinally across the bowl. At the sides of this, near the middle, are two human figures, executed

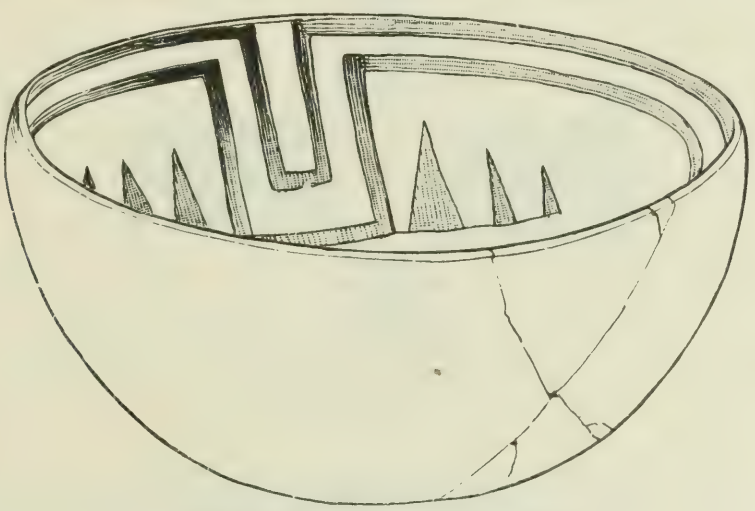


FIG. 264.—Bowl from Kanab.—$\frac{1}{3}$.

in the most primitive style, as shown in Fig. 267. Their angular forms are indicative of textile influence. The middle part of the bowl is broken out, so that the feet of one figure and the head of the other are lost.

These figures resemble those painted upon and picked in the rocks of the pueblo region, and the triangular head is sometimes seen in the ceramic decoration of modern tribes. A bowl with similar figures was brought from Tusayan by Mr. Mindeleff. It is illustrated in Fig. 268.

FIG. 265.—Painted device.

Among the many fine things from the mound at Saint George are a few red bowls. They were made of a slightly reddish clay, or the paste has reddened uniformly in burning, and a slip or wash of bright red

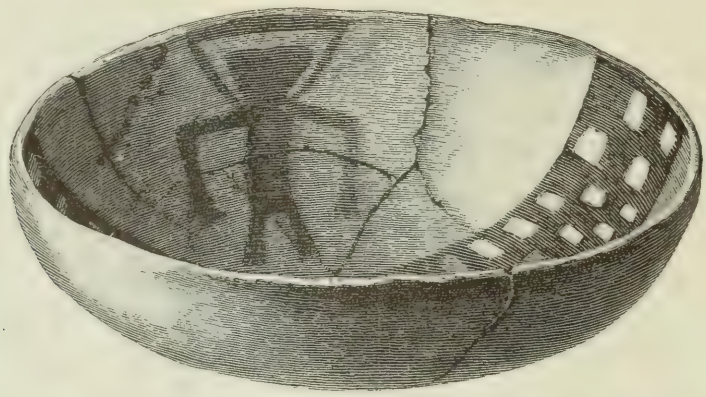


FIG. 266.—Bowl with human figures: Tumulus at Saint George.—$\frac{1}{3}$.

color has been applied to the surface. The designs are painted in black, but differ in style from any of the preceding. This work corresponds

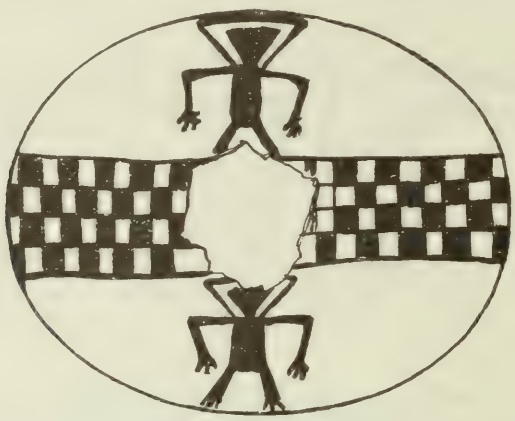


FIG. 267.—Painted design.

very closely indeed with the decorations of similar vessels from the Little Colorado. The marked peculiarities of the ornamentation and

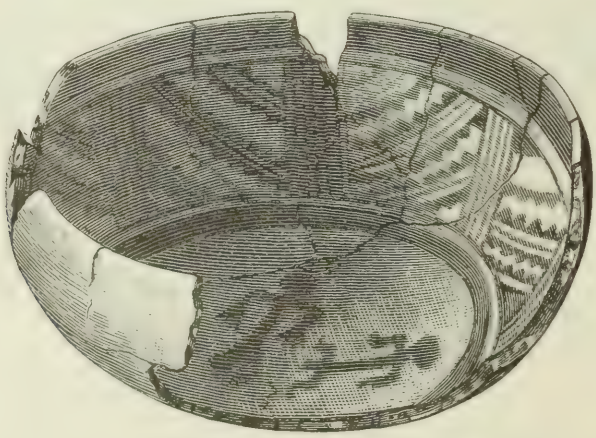


FIG. 268.—Bowl with human figures: Province of Tusayan.—$\frac{1}{3}$.

color of these bowls give rise to the idea that they may have been intended for some especial service of a ceremonial character. It is not

impossible, however, that these vessels reached very distant localities by means of trade. A representative example is shown in Fig. 269. The broad interior band of ornament is divided into four compartments by vertical panels of reticulated lines. The compartments are occupied by groups of disconnected rectangular fret-links on a ground of oblique stripes.

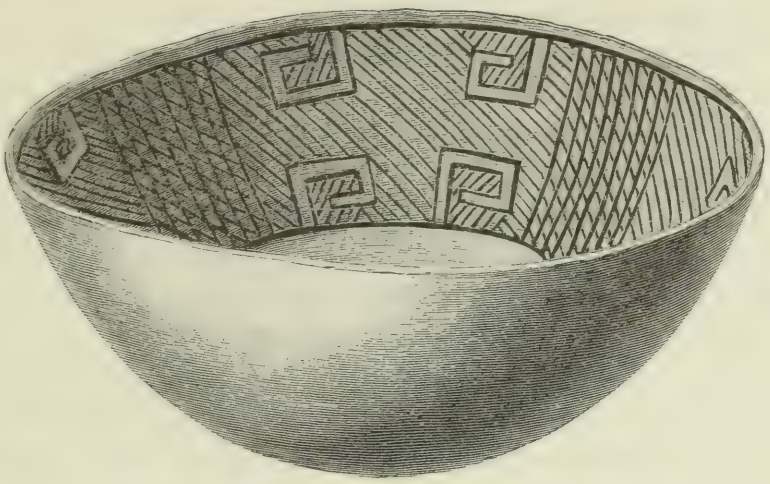


FIG. 269.—Red bowl: Tumulus at Saint George.—$\frac{1}{3}$.

The heart-shaped bowls previously mentioned include medium sized and small vases, with slightly conical bases, distended shoulders, and much constricted, often depressed, apertures. They are of very general distribution, but like the hemispherical red bowls are rarely found in numbers. It is probable that they were devoted to ceremonial rather than to domestic uses. The shapes are generally pleasing to the eye; the finish is exceptionally fine, and the designs, though simple, are applied with more than usual care.

A very good specimen from the tumulus at Saint George is illustrated in Fig. 270.

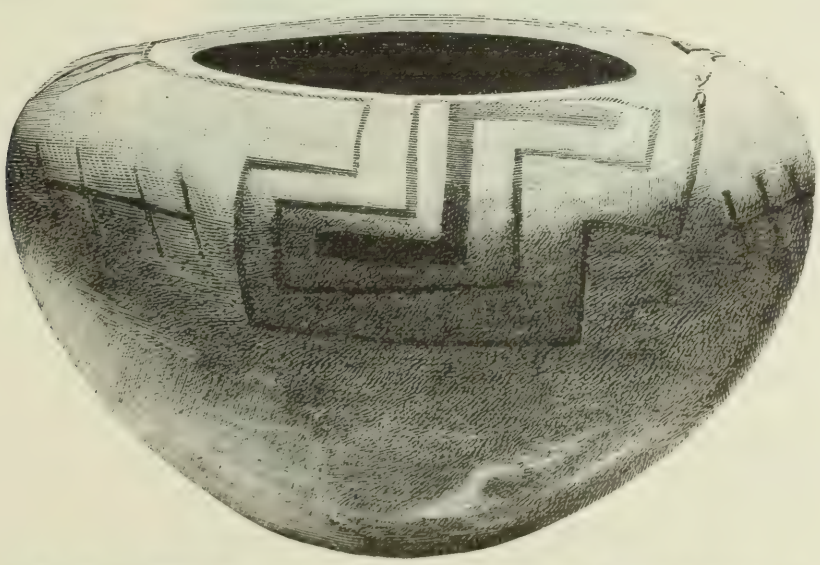


FIG. 270.– Heart-shaped bowl of red ware: Tumulus at Saint George.—$\frac{1}{3}$.

The bottom in this case is slightly flattened, and the incurved lip but slightly sunken. The paste is a light red and the surface has received

a coat of bright red color. The design is in black, is extremely simple, and rather carelessly drawn. The principal figure seems to be a very simple form of the favorite device—the meander.

A large fine bowl much like the preceding, and obtained from the same locality, is owned by the Salt Lake City Museum. The design is of the same class, but very much more elaborate. Another example from Saint George is smaller and yellowish-gray in color, with figures in red and black. At Kanab I picked up fragments of a small vessel, highly polished and of a rich, brownish-purple color, the designs being in black. Another fragment showed designs in bright red and black upon a yellowish ground.

OLLAS.—I have already called attention to the fact, that the Saint George tumulus furnished no example of ollas or large-necked vases of the painted variety, vessels of this class being plain or of the coiled ware. In the vicinity, however, I collected fragments of the white painted pottery derived from large vessels of this class, very much like the large, handsome vessels of ancient Tusayan. A number of such fragments come from the vicinity of Kanab. Plain vessels of this shape were obtained from the tumulus at Saint George. They are identical in every other respect, save the presence of designs, with the painted pottery. Some have received a wash of red, while it is not improbable that others have lost their color or decorative figures by wear or weather.

FIG. 271.—Red pitcher: Tumulus at Saint George.—$\frac{1}{3}$.

HANDLED VESSELS.—From the tumulus at Saint George we have a very excellent example of pitcher, which is shown in Fig. 271. The shape is not quite satisfactory, the neck being clumsy, but the workman-

ship is exceptionally good. The surface is even and well polished and the color is a strong red. The painted design in black, upon the red ground, consists of a number of meandered lines, to which are added at intervals small dentate figures, as seen in the cut.

DISTRICT OF THE RIO SAN JUAN.

In a number of ways the valley of the Rio San Juan possesses unusual interest to the antiquarian. Until within the latter half of the nineteenth century, it remained wholly unknown. The early Spanish expeditions are not known to have penetrated its secluded precincts, and its cliff-houses, its ruined pueblos and curious towers have been so long deserted that it is doubtful whether even a tradition of their occupation has been preserved, either by the nomadic tribes of the district or by the modern pueblos of the south. Certain it is that no foreign hand has influenced the art of this district, and no Spanish adventurer has left traces of his presence.

The ceramic remains are more uniform in character and apparently more archaic in decoration than those of any other district. They belong almost exclusively to two varieties, the coiled ware and the white ware with black figures. The former has already been described, the latter must now pass under review.

It is unfortunate that so few entire vessels of the painted pottery have been found in this region. The fragments, however, are very plentiful, and by proper study of these a great deal can be done to restore the various forms of vessels. In my paper upon this region, in the Annual Report of the Survey of the Territories for 1876, I gave a pretty careful review of the material then in hand. Finding that in very few cases were there whole vessels representing the achievements of the ancient potter and decorator, I presented a number of restorations from the better class of fragments. This was done in a way that could lead to no serious misapprehension, as the fragments used were always clearly indicated. The expert need never go astray in his estimate of the character of the vessel to which given pieces belonged, and his restoration from them gives a completeness of conception to the reader or student at a distance that could never be acquired by the most careful study of illustrations of the fragments. The fragments are exceedingly plentiful about camp sites and ruins, and fairly whiten the debris slopes beneath the houses in the cliffs. I found my mind so diverted by these fascinating relics that it was often difficult to keep the geologic problems of the district properly in view.

No tumuli or burial places were observed, but I suspect that careful search will bring them to light, and that they will yield much richer results than the scattered fragments of the surface. The district now under consideration comprises the entire drainage of the Rio San Juan. It includes the well-known valleys of the Animas, the La Plata, the Mancos, the McElmel, and the Montezuma on the north, and the Chaco

and the de Chelly on the south. On the north I include also a portion of the valley of the Rio Dolores. The center of the district will not be very far distant from the corner stone of the four political divisions of Colorado, New Mexico, Arizona, and Utah.

The collections from the valley of the Rio de Chelly, one of the richest sections of this district, are very badly scattered, and the vessels cannot be identified. Many fine things have been carried away to the south and are now in the collections from Cibola and Tusayan; while others have been brought east by the various expeditions without a proper record of the locality. This is to be regretted, as it makes it impossible to study the shades of distinction between the wares of neighboring localities.

Bowls were very numerous and greatly varied in size, finish, and ornamentation. Many have received painted designs both inside and out. This occurs with those having nearly upright rims. Handled-cups of hemispherical shape are also common, but the heart-shaped bowls are of rare occurrence. Bottle-shaped vessels and ollas have not, as in the south, formed a prominent feature. For some of the latter very neat lids have been made, the rims being shaped for their reception. Upright vessels with handles are common. Eccentric or animal forms have not been found.

Bowls.—The arrangement of the designs upon the bowls is far from uniform. In a great majority of cases, however, they occupy belts encircling the inner and outer margin. The fragmentary condition of the remains makes it impossible to restore designs that covered the entire surface of the vessels. The decorations comprise nearly all the usual elements and motives. In Fig. 272 we have a small bowl from Monte-

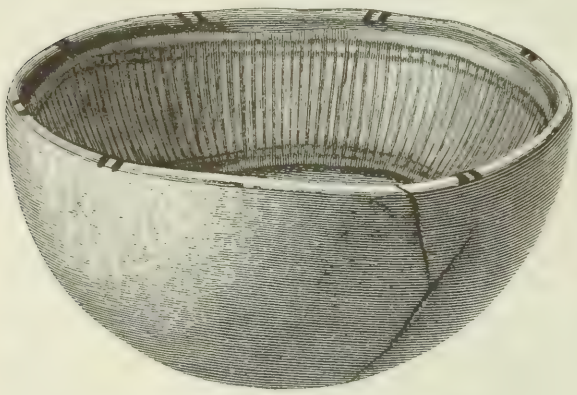


Fig. 272.—Bowl: Montezuma Cañon.—$\frac{1}{3}$.

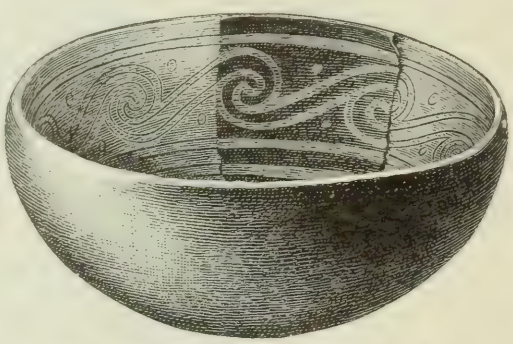


Fig. 273.—Bowl: Rio San Juan.—$\frac{1}{3}$.

zuma Cañon, Utah. In form it is a deep hemisphere. The design is upon the interior surface, and consists of a broad band bordered by heavy lines and filled in with vertical lines. The rim is ornamented with seven pairs of dots. Fig. 273 is restored from a fragment obtained in southwest Colorado. It shows an interior ornament consisting of a well-drawn chain of volutes.

Many of the bowls were large and handsomely finished, both surfaces being whitened and polished. A superior example is given in Fig. 274.

Neat borders have been applied to both interior and exterior surfaces. They are suggestive of patterns produced through the technique of textile products, and consist of interrupted forms of the meander. I have restored from small fragments in this and other cases, for the reason that no large fragments of the finer vessels are preserved.

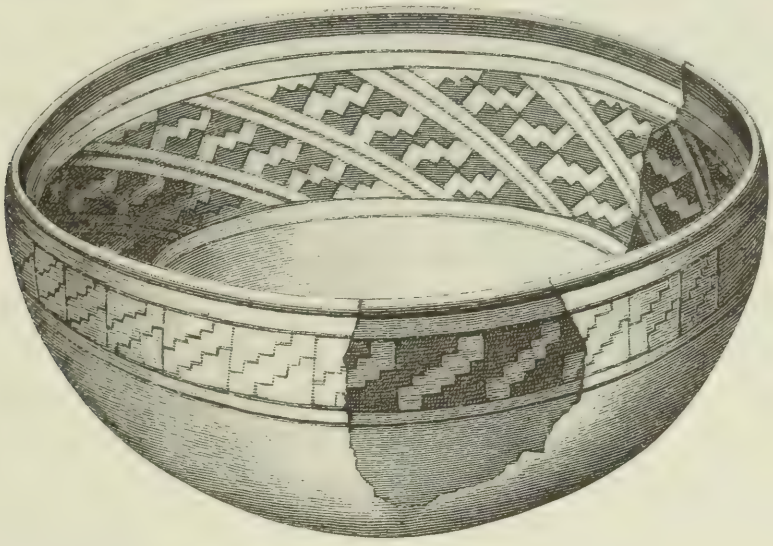


FIG. 274.—Bowl: Rio San Juan.

Fig. 275 illustrates a very pleasing vessel. It is hemispherical, and about eleven inches in diameter. A narrow zone of ornament based upon the meander encircles the exterior margin of the rim, and a broad, carefully drawn design, consisting of two parallel meanders, Fig. 276, occupies the interior. It will be seen that the meandered fillets are in white, and the bordering stripes and the upper and lower rows of

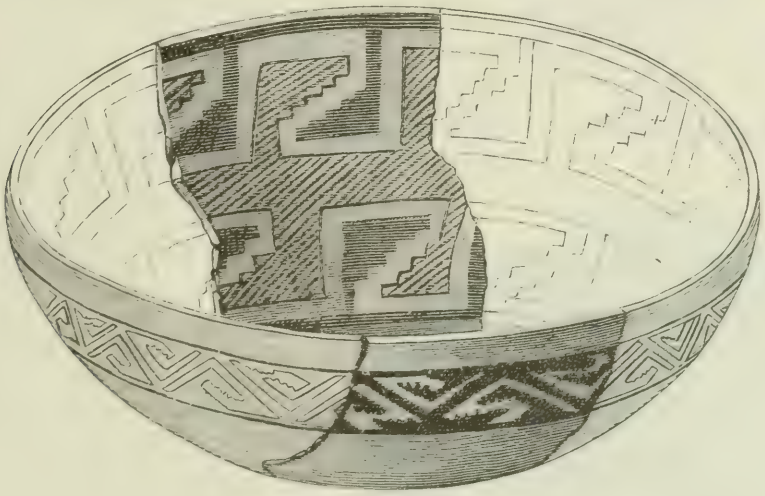


FIG. 275.—Bowl: Rio San Juan.

triangular interspaces are in solid black, while the median band and its connecting triangles are obliquely striped. It should be noticed that the oblique portions of the meanders are indented or stepped. This is a very usual occurrence in these decorations, and may be taken as a pretty decided indication that they were copied, more or less directly,

from textile ornamentation in which all oblique lines are necessarily stepped.

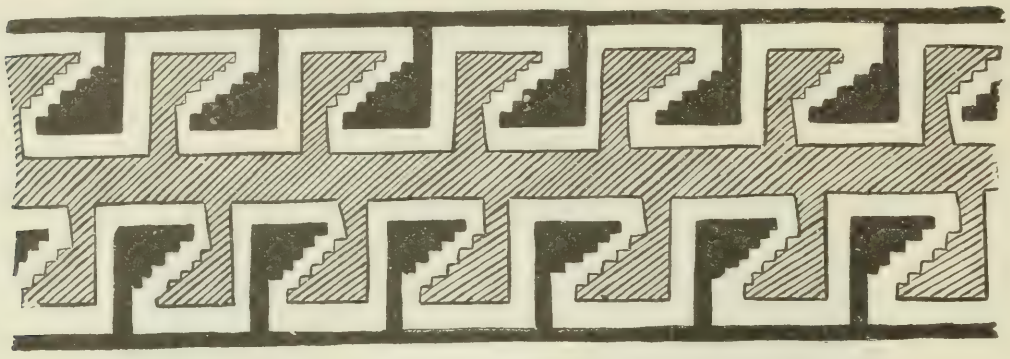
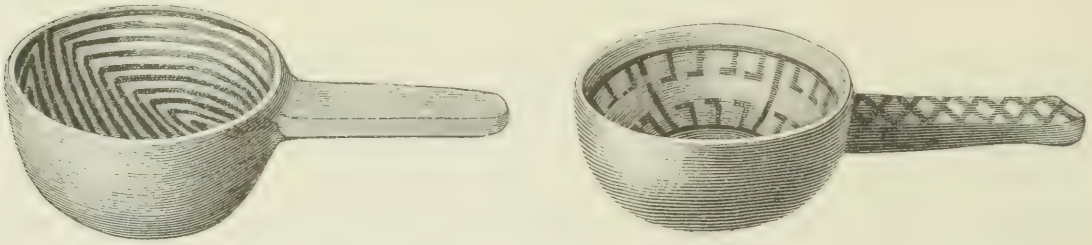


FIG. 276.—Painted design.

HANDLED CUPS.—Small cups were generally furnished with handles and probably served as ladles and spoons. An entire specimen is rarely found. Two are illustrated in Figs. 277 and 278. They were obtained by W. H. Jackson from the ruins of Montezuma Cañon. The handles of these vessels vary a great deal; some are flat, while others are round, consisting either of a single or a looped roll of clay; some are hollow,



FIGS. 277 and 278.—Handled cups: Montezuma Cañon.—$\frac{1}{3}$.

resembling the handles of gourds, and a few are made of twisted fillets. This latter form belongs generally to upright cups.

OLLAS.—It is quite impossible to make satisfactory restorations of the vases or ollas from the small fragments recovered. The evidence is sufficient, however, to show that vessels of this class were numerous, and often large. I have made two restorations of small examples belonging to this class, of which there are fragments showing the neck and upper part of the bodies. The bottoms are so universally rounded that I have drawn full globular shapes; Figs. 279 and 280. The most striking character of Fig. 279 is the shape of the rim, which is fashioned for the reception of a lid. The same feature is noticed in a small vessel obtained at Zuñi.

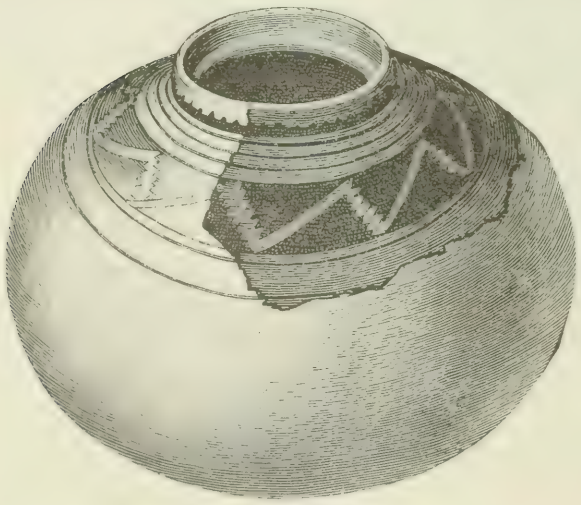


FIG. 279.—Vase: Rio San Juan.

Examples of lids from the San Juan Valley are shown in Figs. 281 and 282. They were evidently designed for vessels of the class just described. The specimen given in Fig. 281 is neatly finished and embellished, and the quality of the ware is very superior.

FIG. 280.—Vase: Rio San Juan.

HANDLED VASES.— Many small vessels were furnished with handles, some horizontal and others vertical. Of the first variety is the example shown in Fig. 283. The fragment was obtained from the great ruin at "Aztec Springs," Colorado. It shows a small, symmetrical vessel, with black lines and devices. The handle, which probably had a companion on the opposite side, is strong and neatly made.

Figure 284 represents a very pretty little vessel, brought by Mr. W.

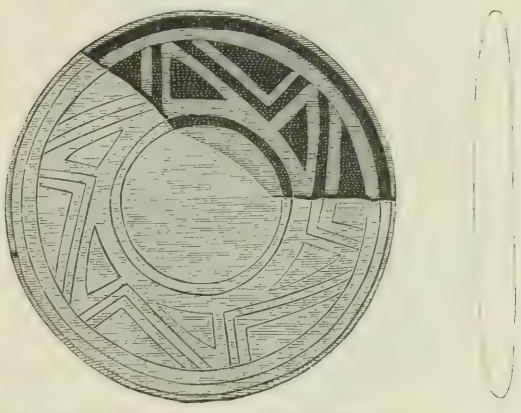


FIG. 281.—Vase lid: Rio San Juan.

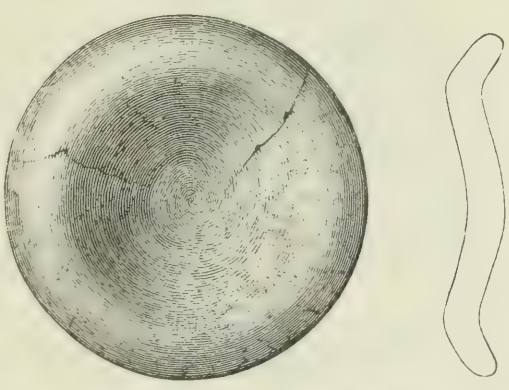


FIG. 282.—Vase lid: Rio San Juan.

H. Jackson from the Cañon de Chelly. It is of the usual gray polished ware, the base being somewhat roughened by use. The design consists of encircling lines combined with a belt of disconnected triangular hooks or fret-links.

Handled mugs with round bodies and wide high necks were in great favor with the San Juan potter. There are but two entire specimens in the collection. These were obtained by Capt. Moss, of Parrott, who stated that they, with other relics, had been exhumed from a grave in the San Juan Valley. Both are comparatively rude in construction, and seem to be considerably weathered. The one shown in Fig. 285 is decor-

FIG. 283.—Handled bottle: Rio San Juan.

ated with a classic meander which encircles the body of the vessel. The other, illustrated in Fig. 286, has the upper part covered with simple figures resembling bird tracks.

FIG. 284.—Small bottle: Rio San Juan.—$\frac{1}{3}$.

Among the most novel works of the ancient potter are the flat-bottomed mugs with upright sides, and with vertical handles which extend the whole length of the vessel, giving very much the appearance of a German beer mug. For a long time it was thought improbable that a vessel of this character should be the *bona fide* work of the cliff dweller, for his status of culture seemed to call for globular bodies and rounded bases. But so many examples have been found that there is no longer room for doubt.

FIG. 285.—Handled mug: Rio San Juan.—$\frac{1}{3}$.

FIG. 286.—Handled mug: Rio San Juan.—$\frac{1}{3}$.

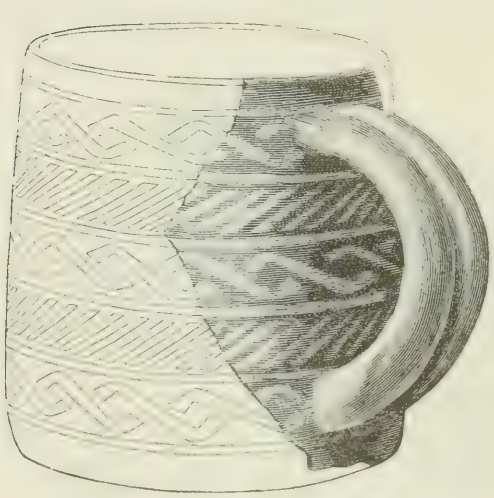


FIG. 287.—Handled mug: Rio San Juan.—$\frac{1}{2}$.

FIG. 288.—Handled mug: Southern Utah.—$\frac{1}{2}$.

Fig. 287 is restored from a large fragment brought from the San Juan Valley. Its walls widen a little below, and the very pretty ornament is

somewhat unevenly applied. The handle is made of a double rope of clay, and extends from the lip to the base. The example shown in Fig. 288 was obtained in the vicinity of Provo, Utah, by Capt. G. M. Wheeler's expedition. It is so like those from the San Juan that I place it here for comparison. It is a little wider toward the base, and is nearly symmetrical. It is four inches in height and the same in diameter. A very similar vessel, probably from the Province of Tusayan, is found in the Keam collection.

DISTRICT OF THE COLORADO CHIQUITO.

The collection from this district, which includes the ancient provinces of Cibola and Tusayan, is already very large, and much more material will yet accrue, for pottery fanciers have taken up the search, and both whites and Indians are on the *qui vive* for additional examples of the artistic and showy specimens.

The National Museum has procured many fine pieces through the agents of the Bureau of Ethnology, and the collection of Mr. Keam is especially rich in the pottery of Tusayan. Some of the finer examples of the latter collection are selected for illustration.

It seems unaccountable that such a large number of the ancient vessels should be preserved, and that too in a country where vessels are constantly in demand. Many have been picked up by the Pueblo tribes and laid away for especial uses or possibly as heirlooms; but many of those secured by recent collectors were obtained from the sites of ancient settlements, from burial places, and from caves, and brought directly to the market so recently made for them.

There can be no doubt that many of the specimens accredited to this district have come from neighboring or distant provinces; yet within the valley of the Little Colorado there are such wide variations from predominant types that foreign pieces cannot be readily detected. Many of the finer pieces of the white ware are rather new looking and show very superior taste and skill. The indications are that the manufacture of this white ware was kept up in portions of this district down to a comparatively recent date, possibly until the coming of the Europeans. It will probably be impossible to determine just why and how the archaic types gave way to the transitional and modern. It may be found, however, that the influence of the Spaniard was a factor in the change.

Beside the archaic white ware and its closely associated red ware the province of Tusayan furnishes two or three distinct varieties, all of which, unlike that ware, are apparently confined to very limited districts. These have been briefly described on a preceding page.

Many pieces of the white ware are of large size and of elegant shape and finish. Some of the ollas and bottles are masterpieces of the art. The texture of the paste is fine and the color is often quite white. The

designs are uniformly in black and are superior in execution and conception to those of the north.

Bowls.—The bowls are very generally hemispherical. The finish, like that of the pottery of the San Juan and the Rio Virgen, is rather rough on the exterior, and whitened and polished on the inner surface. The painted figures are confined to the interior, and are highly elaborated combinations of the usual geometric motives. They are generally made up of four sections of double-zoned borders such as occur on the exterior of vases, cut out, as it were, and fitted into the bowl in a cruciform arrangement, a plain square remaining in the bottom of the vessel. See Fig. 291. There are, however, many examples which consist of two encircling zones of ornament identical in style and arrangement with examples from the Rio Virgen, Figs. 230 and 231, and from the Rio San Juan, Figs. 248, 259, and 274.

In Fig. 289 we have a representative example of the bowls of ancient Tusayan. The outer surface is rudely trowel-finished, but the inside is

Fig. 289.—Bowl: Province of Tusayan.—$\frac{1}{3}$.

well polished. The painted design consists of four parts arranged about a central square. Each part comprises a number of alternate bands of straight and zigzag lines.

The superb bowl presented in Fig. 290 is nearly fifteen inches in diameter and seven inches deep. It is hemispherical but not quite symmetrical. Having been broken, it was mended by its owners after their aboriginal fashion. Two pairs of holes have been bored on opposite sides of a long fracture for the insertion of thongs. Other perforations have been commenced but do not penetrate the vessel. The walls are upwards of one-eighth of an inch in thickness near the rim, but are less than that throughout the body of the bowl. The paste is of a dark gray color, speckled with ashy-white particles, which may be pulverized potsherds. The interior surface is finished with a slip of white clay

and has received a fair degree of polish. The exterior is only trowel-finished and is much scarified by use. The interior is embellished with a very elaborate design, which is given with all possible accuracy in a

FIG. 290.—Bowl: Province of Tusayan.—$\frac{1}{3}$.

plain projection, in Fig. 291. The work does not exhibit a great deal of skill or neatness in execution, but the whole design is carefully made out

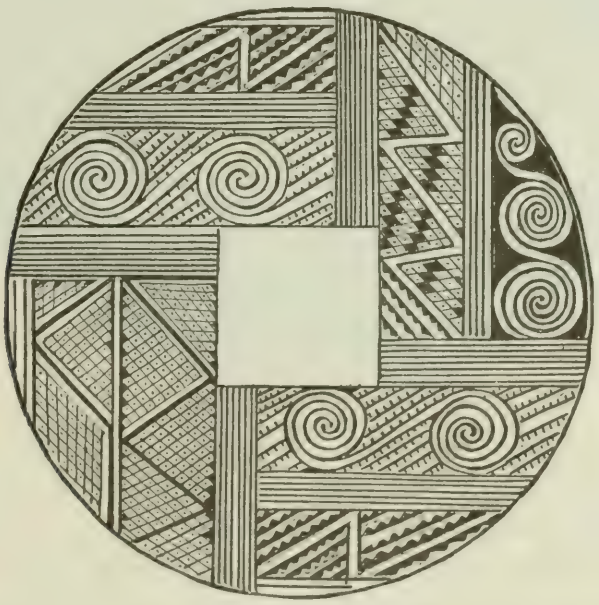


FIG. 291.—Painted design.

and well adjusted to the deeply concave surface. An analysis of this figure is easily given. It is a cruciform arrangement of four portions of rather elaborate double borders. Each part consists of two parallel

bands, a principal and a subordinate, separated by parallel lines and taking the relation to each other always noticed in the two belts of designs painted upon the exterior of vases. Two of the sections are alike. The others differ from these and from each other.

One figure, consisting of three linked volutes, is defined in white by painting around it a black ground. The artist in painting this vessel has probably not thought of achieving anything beyond the filling up neatly of the four spaces, and has followed the usual practice of borrowing his motives from other objects; yet it will not be wise to conclude that these figures are really meaningless combinations of lines. The persistency and individuality of certain motives makes it almost certain that they are not the result of aimless elaboration, and that the potter understood their significance. They are too purely geometric, however, to furnish any clew to us through internal evidence. We have no resource beyond the analogies of historic art. Modern tribes use the current meander to symbolize water, and a leading motive in many of these designs—the linked scroll running through a field of serrate lines—is wonderfully like some forms of the Aztec symbol for water, as may be seen by reference to the Mexican codices.

Another very excellent example of these bowls is presented in Fig. 292. It is small and shallow, measuring six and a half inches in diam-

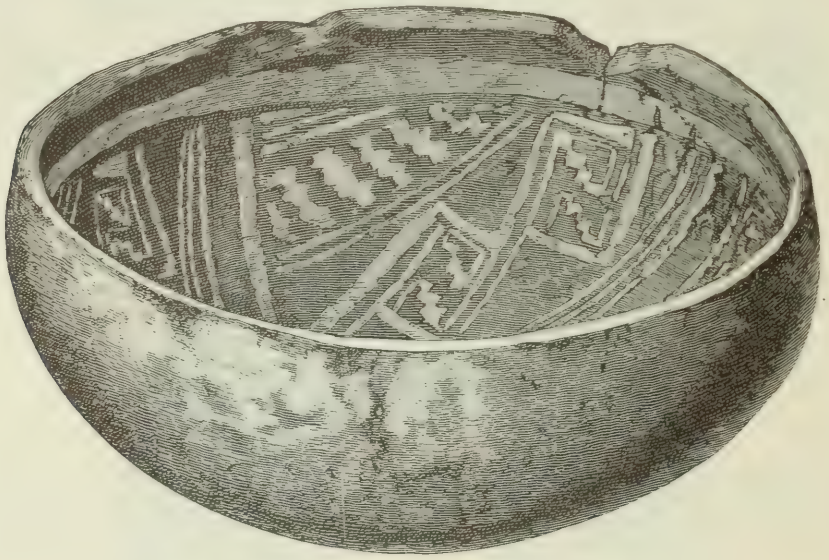


FIG. 292.—Bowl: Province of Tusayan.—½.

eter and two and a half in depth. The material is somewhat soft and chalky. The walls are thick and the surface is well finished. The painted design is cruciform, like the preceding, but is much more simple and satisfactory. It is interesting to note the changes rung upon the few simple motives employed in these designs. Again apparently each of the four parts is a fragment of a double border, cut up and fitted into the concave surface. The bands with oblique, dotted, or stepped lines, Fig. 293, are repetitions of the neck belt of a bottle-shaped vase

or basket, and the other bands with their chaste fret-work repeat a section of the body zone.

Bowls and cups of the hemispherical model are very often supplied with handles. Like other bowls, they are embellished with painted de-

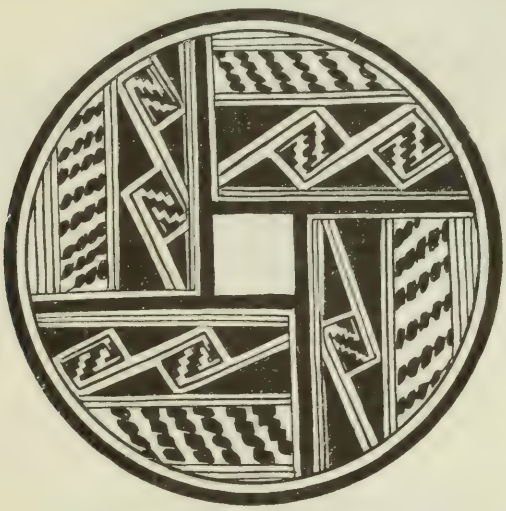


FIG. 293.—Painted design.

signs derived from vases or from textile sources. In order of evolution, they probably follow the plain form—the handles being added to facilitate use.

The principal varieties of handles have already been described. The bowl illustrated in Fig. 294 is furnished with a single semicircular loop.

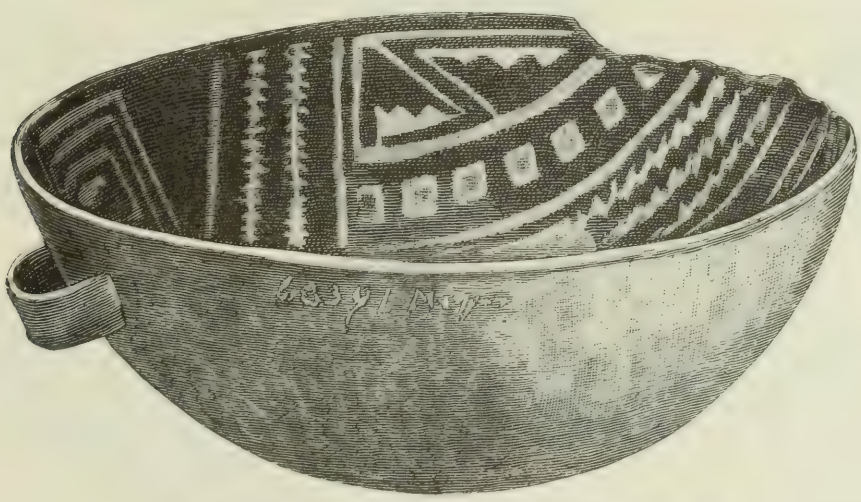


FIG. 294.—Handled bowl: Province of Tusayan.—$\frac{1}{3}$.

In form, finish, and color it is the same as that of the other bowls, and the painted design has a similar derivation and arrangement.

In the collection we have a fine large red bowl, now in a fragmentary state. It is eleven inches in diameter and six inches deep. A small loop is attached to the outside near the margin. It has a very decided resemblance in color, finish, and ornamentation to the red bowls of the Rio Virgen. The color of both the surface and the mass is a dull red. A broad band of bright red paint encircles the exterior, leaving a plain

marginal band of the ground color and a plain area of the same upon the bottom. The painted design, which covers the inner surface is shown in Fig. 295. We discover in it at first sight a type to all appear-

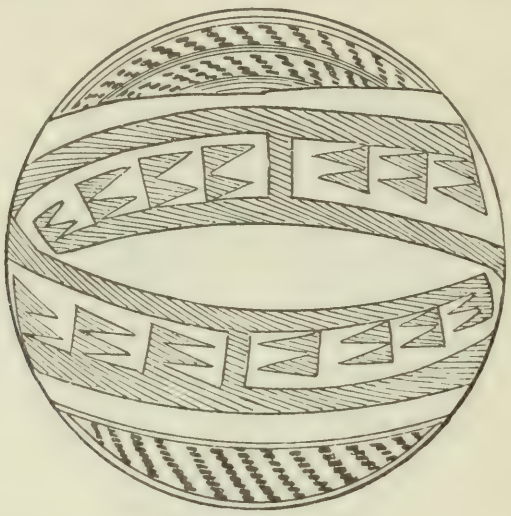


FIG. 295.—Painted design.

ances totally distinct from the usual devices of this locality, but a closer study reveals the existence of the favorite motive—the meander—doubled up across the middle in a way to challenge detection, with the ever-present auxiliary band above and below. The curiously complex and very pleasing ornament is amplified in Fig. 296.

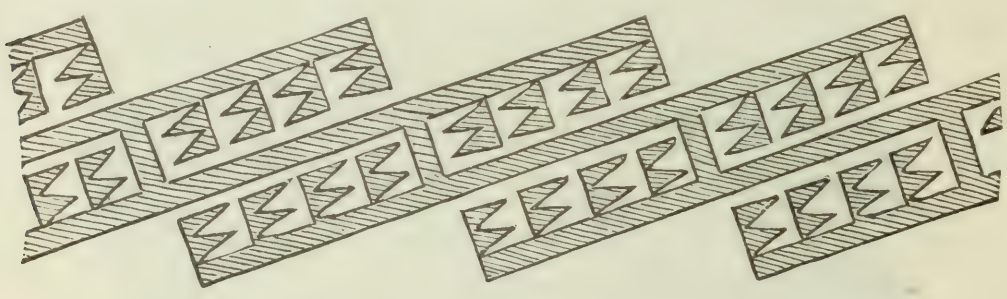


FIG. 296.—Original form of painted design.

One small cup or bowl has two ears, not semicircular, but rectangular, which are placed horizontally and project in sharp points at the corners.

The neat little vessel given in Fig. 297 has a much elongated horizontal loop, carelessly made and rudely attached. The bowl is handsomely finished. The margin is ornamented with a series of closely placed transverse lines or dots, a character appearing more frequently in the northern ware. The interior design is made up of four independent parts as usual.

The cup presented in Fig. 298 serves to illustrate another variety of handle—a large vertical loop, extending from rim to base, like those on the upright cups given in Figs. 287 and 288. The paste is very fine

grained, and breaks with a conchoidal fracture. The color is gray and the paint reddish from the firing. The bottom is flat, a rare occurrence in the more archaic pottery. The painted design is based upon the

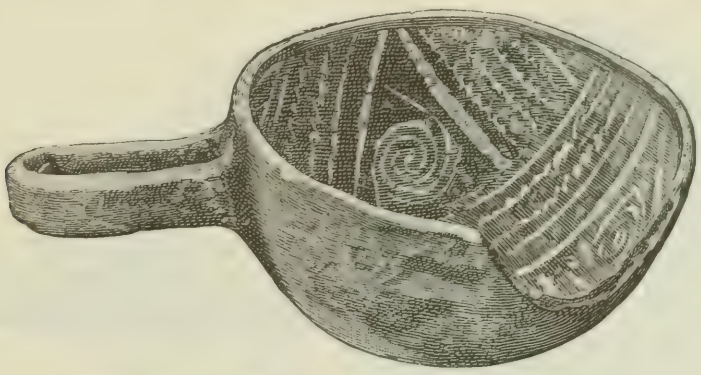


FIG. 297.—Handled cup: Province of Tusayan.—$\frac{1}{3}$.

meander, and occupies nearly the entire exterior surface of the cup. The handle has two bird-track shaped figures on its outer surface.

FIG. 298.—Handled cup: Province of Tusayan.—$\frac{1}{2}$.

Vessels with long cylindrical handles are distributed over a very extended district, but in Tusayan they are of a better class of ware than elsewhere. Here the handles are long and stout and frequently termi-

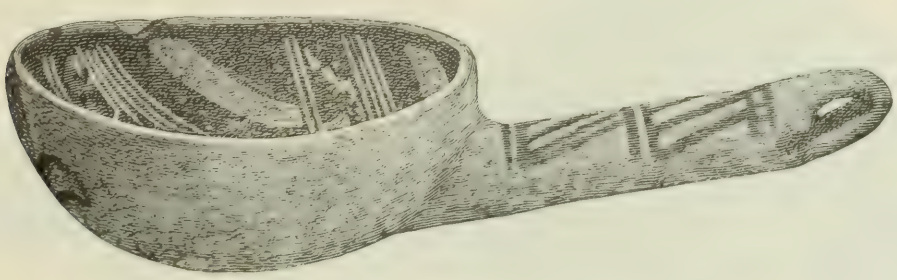


FIG. 299.—Dipper: Province of Tusayan.—$\frac{1}{3}$.

nate in a loop, probably intended for the attachment of a cord. The bowl is often graceful in form and tasteful in ornament. One of the finer examples is illustrated in Fig. 299. It is of the chalky ware, and has a very good surface finish. The handle is one inch in diameter and five inches long. It is hollow and terminates in a narrow loop. It is decorated with two groups of spirally inclined lines. The interior decoration of the bowl furnishes a most excellent example of the cru-

ciform designs previously described. This is well shown in Fig. 300. The exterior surface is embellished with a most primitive drawing of a bird, Fig. 301—a striking illustration of the pictorial accomplishments

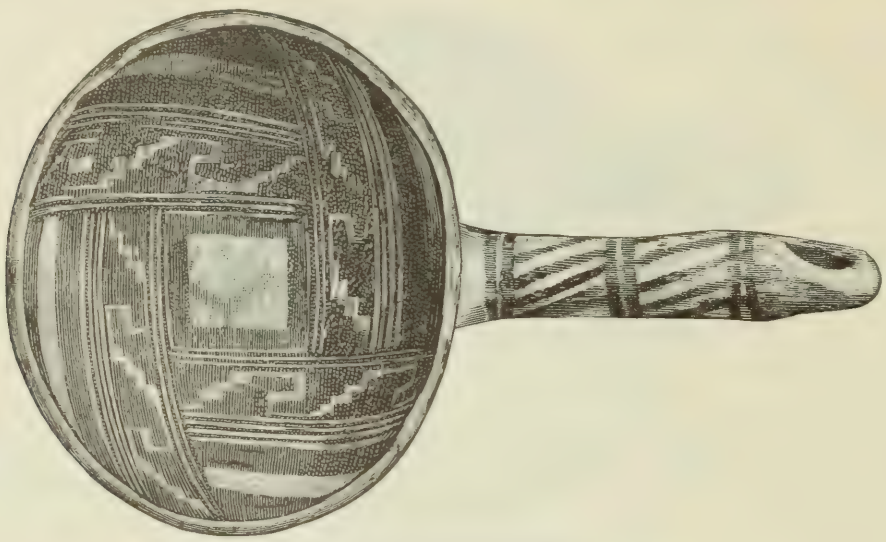


FIG. 300.—Dipper: Province of Tusayan.—$\frac{1}{3}$.

of these classic decorators. Subjects of this class are of rare occurrence upon the ancient white ware.

FIG. 301.—Figure of bird from exterior of dipper.

The dipper presented in Fig. 302 is somewhat inferior in workmanship to the preceding example. The handle is plain and terminates in a hori-

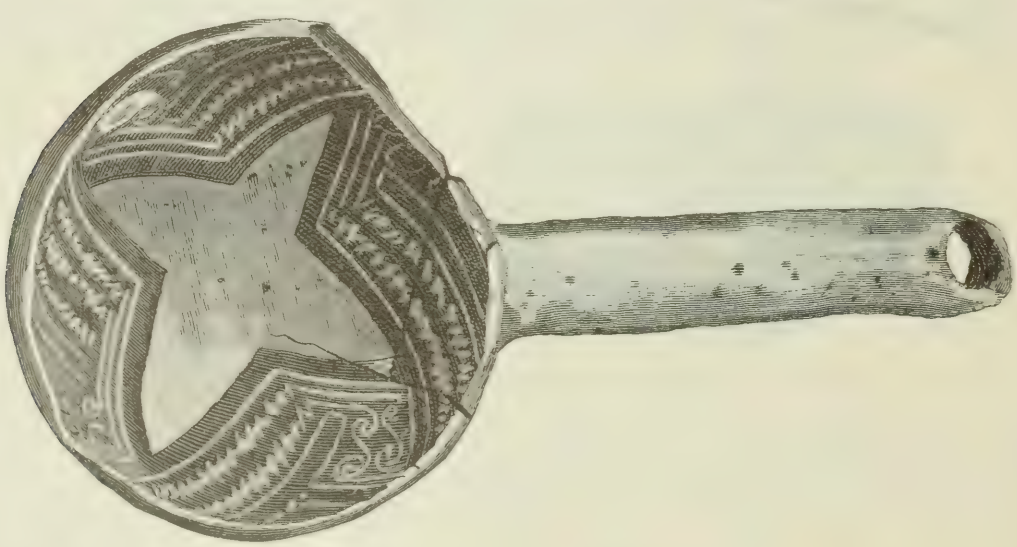


FIG. 302.—Dipper: Province of Tusayan.—$\frac{1}{3}$.

zontal loop. The painted design is not arranged about a square, as in the examples given, but leaves a space in the center of the bowl

resembling a four-cornered star. This shape is, however, the result of accident. The four parts are units of an elaborate border, not severed from their original connection, but contorted from crowding into the cir-

FIG. 303.—Painted design.

FIG. 304.—Painted design.

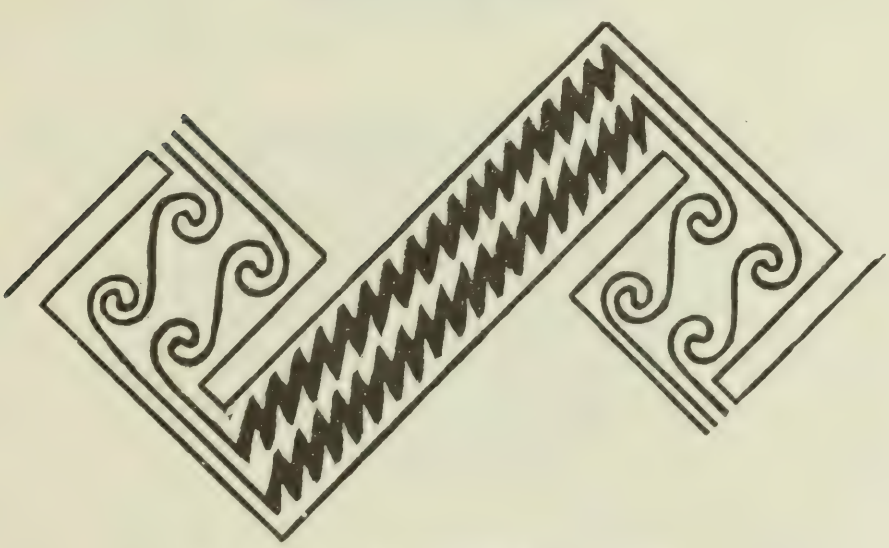


FIG. 305.—Unit of the design drawn in black.

cular space. The design drawn upon a plain surface is shown in Fig. 303. Projected in a straight line, as in Fig. 304, it is readily recognized as the lower three-fourths of a zone of scroll ornamentation. A unit of

the design drawn in black is shown in Fig. 305. The meander is developed in the white color of the ground, and consists of two charmingly varied threads running side by side through a field of black, bordered by heavy black lines. The involute ends of the units are connected by two minute auxillary scrolls.

Bowls heretofore referred to as heart-shaped are of frequent occurrence in the valley of the Little Colorado. A number have been obtained by the Bureau of Ethnology directly from the Pueblo Indians, while a few very superior specimens are in the collection of Mr. Keam. A somewhat globular example is represented in Fig. 306.

It is remarkable in having four zones of devices. The narrow belt next the lip contains a single line of bird-track figures. The others exhibit simple forms of the meander. It is interesting to notice the variety

Fig. 306.—Heart-shaped bowl: Province of Tusayan.—$\frac{1}{2}$.

of treatment. In the upper band we have a chain of units imperfectly connected. In the others there are series of triangular links quite disconnected from each other. All are defined in white by painting in a ground of black.

This district has furnished few vessels of more exquisite form and decoration than that shown in Fig. 307. It is from the Keam collection. The outlines are exceptionally symmetrical, and the design, developed in the white of the ground, is drawn with more than usual care. The figures are severely simple, however, and comprise but one motive—the typical scroll, which is arranged in three zones, separated by parallel lines. The spaces are filled in with serrate lines, parallel with the connecting fillets or stems of the volutes, as in the case given in Fig. 290.

Another smaller vessel from the same collection is simple and unpretentious, but so thoroughly satisfactory in every respect that one could hardly suggest an improvement. The surface is well polished. The

ground color is whitish, and the design—a chain of classic scrolls—is produced in white by filling up the interstices with black. It is a noteworthy fact that the base of this cup has been perforated, apparently for use as a strainer. Nearly a hundred small round holes have been made while the clay was still soft. A pottery ladle from this region, now in the National collection, exhibits the same feature.

FIG. 307.—Bowl: Province of Tusayan.—$\frac{1}{3}$.

I add another example from the Keam collection, Fig. 309. The margins of the figures are serrate and the volutes, which are in white, have clumsy, disconnected stems.

The vessel presented in Fig. 310 has a flattened upper surface, an angular shoulder, and a high body, slightly conical below. The painted

FIG. 308.—Bowl: Province of Tusayan.—$\frac{1}{2}$.

design is nearly obliterated in places by abrasion or weathering, but is correctly presented in Fig. 311, which gives the three zones in horizontal projection. This brings out a very marked feature, the cruciform arrangement of the parts, which would not be apparent in a vertical projection.

The two inner circles occupy the upper surface of the vessel and the outer one the most expanded portion of the body. The inner belt is separated into four panels or compartments by as many series of transverse lines, the panels being filled in with longitudinal, broken lines.

FIG. 309.—Bowl: Province of Tusayan.—½.

The second band is also divided by four series of straight lines, but the compartments are occupied by scrolls in white, bordered by serrate wings in black. The outer band exhibits a very curious combination of features, the whole figure, however, being based upon the meander

FIG. 310.—Bowl: Province of Tusayan.—½.

It is probable that the grouping in fours is accidental, the division of a surface into four being much more readily accomplished than into any other number above two.

There are few better examples of the skill and good taste of the ancient potter than the bowl illustrated in Fig. 312. The body is much flattened and the incurved margin considerably depressed. The color is reddish, both on the surface and in the mass, while the upper part is painted a bright red. Upon this color, encircling the shoulder and extending inward toward the lip, is a handsome design in black and

FIG. 311.—Painted design.

white lines. This is nearly obliterated, but enough is left to show that it consists of a highly elaborated rectilinear meander pattern, the idea being developed apparently in the light ground color. The painted lines are in black bordered with fine white stripes—a common occurence in the south.

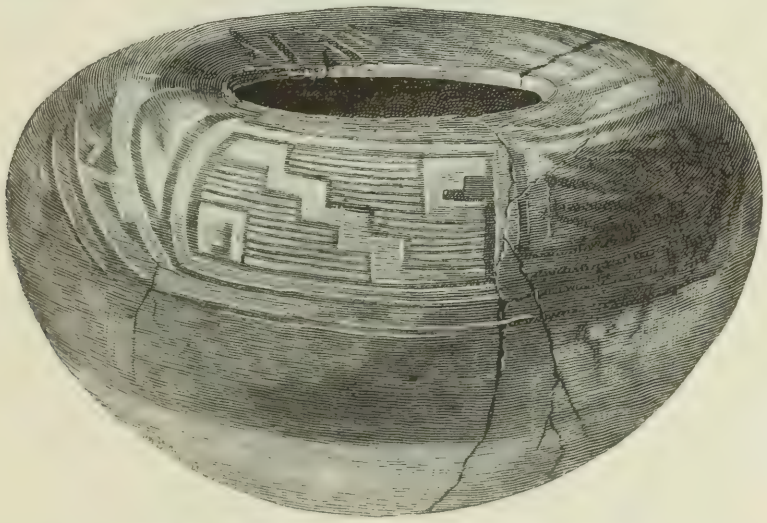


FIG. 312.—Red bowl: Province of Tusayan.—$\frac{1}{3}$.

We have in the Museum an exquisitely shaped vessel of this class obtained from the Zuñi Indians. The material and color are identical with the red specimen from Saint George. The whole surface is painted red and a neat border design in black is worked over this. The lip is not so much depressed as in the preceding examples. Two perforations

occur near the margin, through which the Zuñis have passed a buckskin thong. Another plain bowl is very much compressed vertically.

Oblong bowls are not a prominent feature in Pueblo pottery. A few examples were found at Saint George, Utah, but these are of the shallow variety. The only oblong bowl with incurved rim yet sent in is shown in Fig. 313. It is six inches long and four inches wide. The

FIG. 313.—Oblong bowl: Province of Tusayan.—$\frac{1}{3}$.

ornamentation consists of three lines of meanders, that upon the flat upper surface being irregular and not continuous.

In Fig. 314 we see another variation from the two usual forms of bowls. This vessel is globular, and the aperture quite large. Two small nodes attached to the sides and vertically perforated serve as handles. The ornamentation consists of a number of disconnected and

FIG. 314.—Globular vase: Province of Tusayan.—$\frac{1}{3}$.

greatly varied bands of meandered lines and figures, obliquely placed. The ornamented surface is separated into two parts by vertical panels at the handles. This affords a suggestion of an adventitious or mechanical origin for the vertical bands which are so prominent a feature in modern Pueblo pottery. One of these is partially visible at the right side in the cut.

OLLAS.—A typical example of the chalky ware of Tusayan is illustrated in Fig. 315. It is a wide, low vase of symmetrical form. The body is flattened above and hemispherical below. The material is almost as white and as soft as chalk. The design comprises two zones of devices. One occupies the upright neck, and consists of encircling lines interrupted by vertical bands. The other, upon the flattened shoulder,

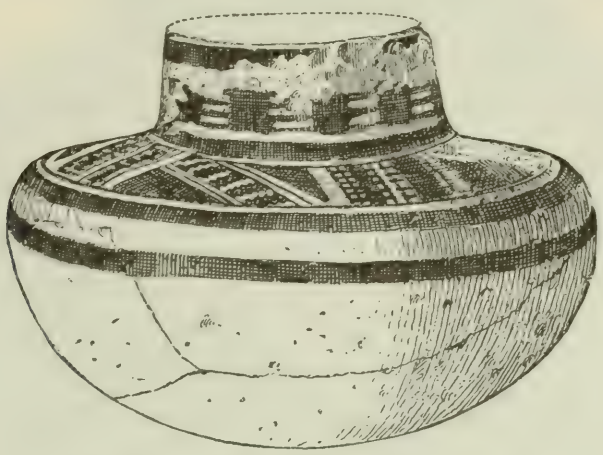


FIG. 315.—Vase: Province of Tusayan.—$\frac{1}{3}$.

is based upon the meander. Both are bordered by wide bands in the dark color and an additional band encircles the body.

Another handsome little vase is presented in Fig. 316. The two meanders show very diverse styles of treatment. In the upper the lines are all oblique, while in the lower they are chiefly rectangular and

FIG. 316.—Vase: Province of Tusayan.—$\frac{1}{3}$.

much prolonged horizontally. Corresponding treatment of the two bands occurs in other vessels.

The vessel shown in Fig. 317 is very different in appearance from the two preceding, and is much larger and ruder in finish. The surface has been finished with the trowel or hand without polishing. It is ten inches high and the same in width. The whole decoration consists of

interlinked meander-units not arranged in belts, but thrown together in a careless manner across the body of the vase. In the Keam collection there is a water bottle nearly twice as large as this, similar

FIG. 317.—Vase: Province of Tusayan.—$\frac{1}{3}$

FIG. 318.—Vase: Province of Tusayan.—$\frac{1}{4}$.

in shape and finish, but having a very different though equally rude painted design. This collection contains also the large pot-like vessel

or cauldron shown in Fig. 318. The walls are heavy, the lip is rounded, and the form is such as to be very serviceable for ordinary domestic use. The ornamentation consists of two bands of figures, the upper, as usual, being very simple. The figures of the body zone are in black upon the light ground. Two sets, or pairs, of the triangular links make the circuit of the vessel, the entire ornament appearing in Fig. 319.

FIG. 319.—Painted design.

There is, however, something less simple and consistent in the ornament seen in Fig. 320. The connecting stems of the units are heavy dark lines. The ends of the links are but imperfectly developed or are obscured by elaboration giving a suggestion of degeneracy, but the whole

FIG. 320.—Vase: Province of Tusayan.—$\frac{1}{3}$.

result is highly pleasing. The shape is an exceptional one, the body being flattened to a greater degree than usual. The ground color and the paste are quite white, yet there is in the design and its treatment a suggestion of the decoration of the cream colored ware of Tusayan. This suggestion is emphasized by the occurrence of the two pairs of dark strokes on the neck—a feature more usual in the yellow wares.

In 1883 Mr. Mindeleff brought in two superb examples of ancient water vases. They are excellent illustrations of the skill and taste of the ancient Pueblo potter. The example illustrated in Fig. 321 is ten and a half inches in height and twelve inches in diameter. Its form

FIG. 321.—Vase: Province of Tusayan. —$\frac{1}{3}$.

is symmetrical and graceful. The surface has been whitened, but is somewhat uneven and not highly polished. The painted design is well preserved, and consists of two broad belts of devices. The upper, occupying the sloping neck, is a very simple combination of lines, based

FIG. 322.—Painted design.

upon a single white meandered line, and the lower is quite complex and encircles the widest part of the body. The latter appears at first sight to be rather complicated, but is easily resolved into its elements.

The zone is five and a half inches in width and consists of two lines of highly elaborated meanders combined in a most ingenious and pleasing manner. The design is projected in Fig. 322 and compares favorably with the exquisite diaper patterns of oriental decorators. A single

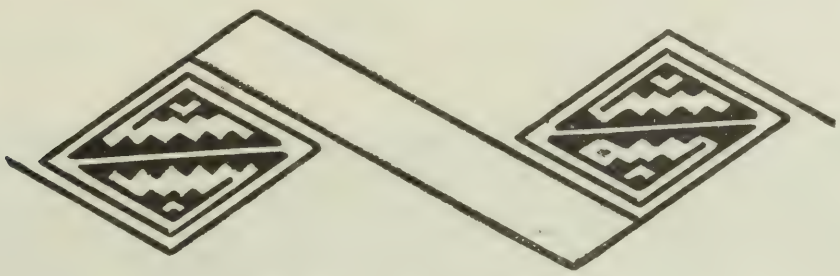


FIG. 323.—Unit of the design.

unit of its structure is given in Fig. 323. The triangular spaces along the border are filled in with fragments of designs harmonious in style with the principal figures. Certain spaces of the expanded connecting

FIG. 324.—Vase: Province of Tusayan.—$\frac{1}{3}$.

fillets of the units, are filled in with serrate or dotted lines. Some portion of the design seem to be developed in the white ground, as, for instance, the figures in the lateral triangles.

The boldness of the primitive decorator is well shown in the manipulation of these large vases. Simplicity and breadth were not sacrificed when it became necessary to carry the oft-repeated figures over the broad surface of such a vessel as that shown in Fig. 324, whose height and width measure fourteen inches each. In shape, in surface treatment, and in the arrangement of the broad belts of decoration this

FIG. 325.—Painted design.

vessel corresponds very closely with the preceding, but the favorite motives are executed in the white color of the ground, and are thrown across the surface of the vessel with charming freedom and boldness. The upper zone encircling the neck is occupied by a large, rather rudely drawn chain of scrolls developed in the white ground by painting the interspaces black. The broad belt of figures encircling the body

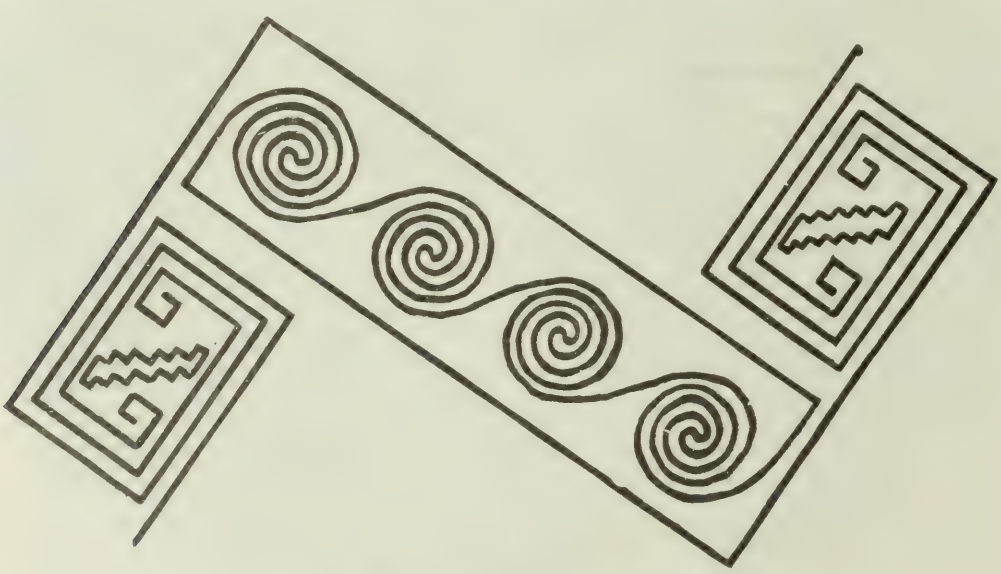


FIG. 326.—Unit of the design.

of the vase is not filled out as in the preceding case, the lower series of triangular spaces being plain. The principal feature consists of a single line of the fret-work developed in the white ground. This is shown in Fig. 325. A unit of the design is given in black in Fig. 326. The connecting curve or stem of the unit incloses a rectangular space, through

which the fillet returns in a series of fine scrolls. The interlocked ends of the units of the principal chain have terminations or hooks angular in two cases and curved in another, demonstrating the identity of the curvilinear and the rectilinear forms of this ornament. The small isolated stepped figure between the hooks tells, I imagine, of a textile ancestry.

In Fig. 327 we have another vase of still higher grade—a very masterpiece of fictile work. It is next to the largest piece of the ancient ware yet described, being twenty-four inches in diameter and upward of twenty inches in height. The form is not quite symmetrical, but the outline is highly satisfactory. The body is full and slightly conical at the

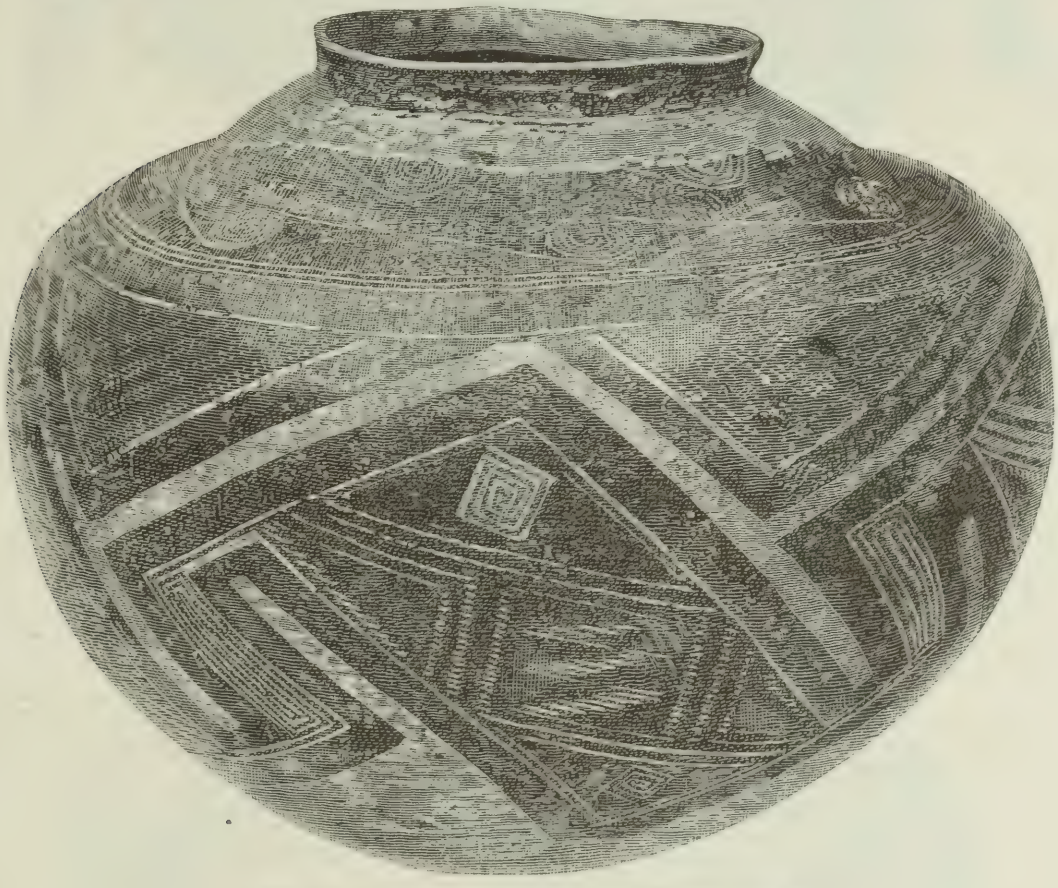


FIG. 327.—Large vase: Province of Tusayan.—$\frac{1}{5}$.

base, and above joins the neck with a graceful convex curve. The surface is even and well polished, and the painted design is executed with great precision. The motives employed are identical with the preceding. Scrolls and fretted figures are carried around the neck, shoulder, and body in three bands suited exactly in width and in size of parts to the conformation of the vessel. The simple scrolls of the upper part need no explanation, and a careful analysis of the broader band, as projected in Fig. 328, furnishes a key to its rather extraordinary construction. The dark lines are drawn with mechanical exactness, and the delicate white lines, in which many of the finer details are worked

out, are *left* with a nicety of handling worthy of the most skilled decorator. By a reference to the outline given in Fig. 329 it will be seen that the whole ornament hangs upon a single thread woven into a chain of delicate fret-work running through the middle of the design. The long

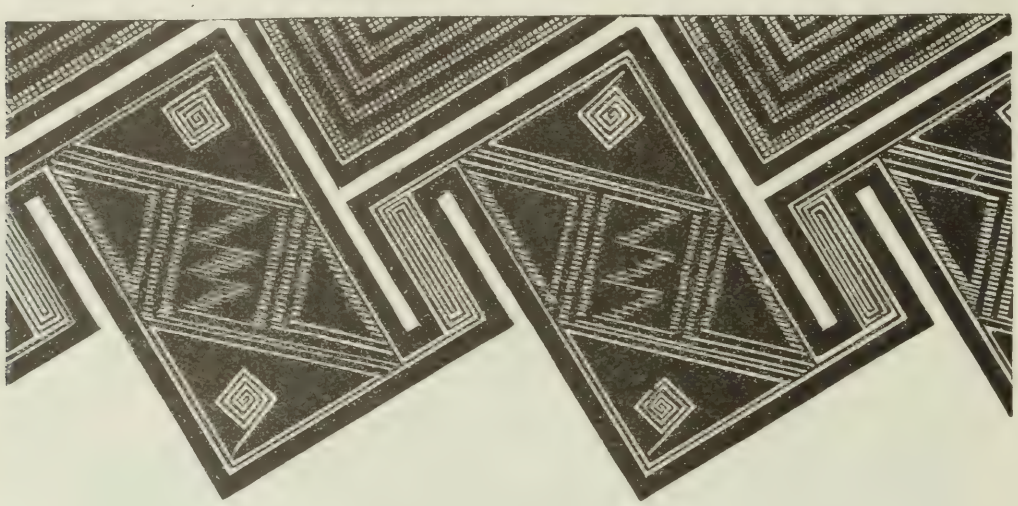


FIG. 328.—Painted design.

connecting band of each unit consists of two lines (taking the black lines as representative of the idea or motive), which separate in the middle part, inclosing a wide rectangular space. This is filled with geometric ornamentation in white lines upon a black ground, as shown in

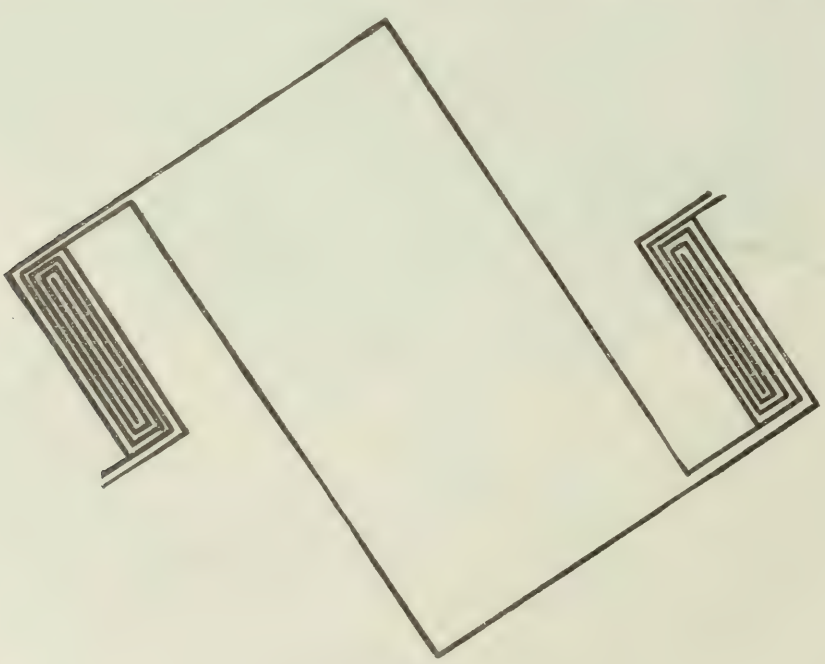


FIG. 329.—Unit of the design.

Fig. 328. The triangular spaces above are occupied by checker-work of light and heavy lines. The very marked rectangular character of this handsome design indicates familiarity with the textile embodiment of the motive.

BOTTLES.—Under this head I desire to present a number of vases having high, narrow necks. Few examples of the pottery of any people

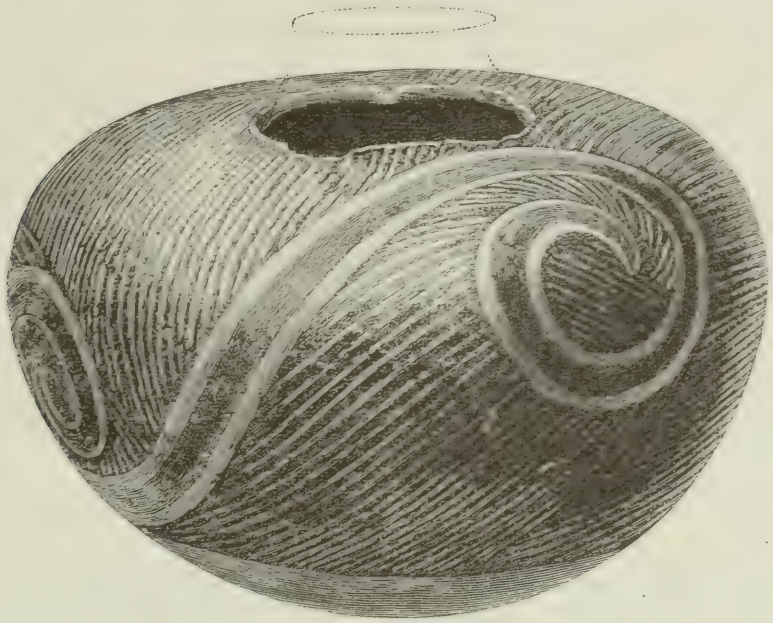


FIG. 330.—Vase: Province of Tusayan.—$\frac{1}{3}$.

show bolder and more successful treatment than the specimen illustrated in Fig. 330. It is a large, full-bodied bottle, the neck and lip of

FIG. 331.—Vase: Province of Cibola.—$\frac{1}{3}$.

which unfortunately are lost. The restored outline can profess to be approximate only. The surface is well polished, though gray from age.

Two masterly scrolls, formed each of a broad black line bordered by white lines, are thrown across opposite sides of the vase. The ground upon which they are drawn is filled in with series of lines which accommodate themselves very gracefully to the surface of the vessel and to the scrolls.

A number of ancient vessels, found in the hands of the Zuñi Indians, were probably obtained by them from some of the neighboring ruins, although in a few cases they may have been carried from distant places in the north or west. The finer examples correspond very closely to the ware of which multitudes of fragments are found at old Zuñi, San Antonio Springs, Nutria, and other places in or near the province of Cibola. They seem to be identical also in many respects with the better class of the white ware of Tusayan. The forms are very much the same and the ornaments exhibit similar arrangements of identical motives.

The superb vessel illustrated in Fig. 331, is a typical example of the work of the ancient potters of Cibola. In form it falls but little

FIG. 332.—Vase: Province of Cibola.—$\frac{1}{3}$

short of perfect symmetry. The body is nearly globular, being slightly compressed vertically. The neck is small and the lip slightly recurved. The surface, originally white, now darkened from use, is well polished excepting where roughened by age. In Fig. 333 we have a partial projection of the painted design obtained by viewing the vase vertically. This may be described as a rosette of spiral rays which consist of gracefully meandered lines alternating with groups of plain stripes. These are developed in the light color of the vase by painting in a black ground.

Viewed from the side the decoration is seen to consist of the two usual zones—a narrow one about the neck, occupied by a meander, and a broad one covering the greater part of the body, crossed obliquely by a number of bands of ornament.

A similar vase, also from Zuñi, is illustrated in Fig. 332. It is much darkened by use and age and has suffered considerably from wear and tear. The ornament consists of three zones, a band of stepped figures about the neck, a handsome meander-chain with terraced links upon the rounded collar, and a broad belt of radiating meanders encircling the body. A vertical view showing the two outer lines of decoration is given in Fig. 334. A peculiar feature in this vessel is the indented finger-hold seen in the lower part of the body, Fig. 332.

In both form and ornament these bottles exhibit decided resemblances to wicker vessels. The introduction of stepped figures and spiral rays sufficiently demonstrates the textile origin of the painted designs.

FIG. 333.—Pa nted design.

FIG. 334.—Painted design.

A few bottles are larger than the examples given. One having a high narrow neck is seventeen inches high and sixteen in diameter of body. Generally vases of this shape are below medium size, and they are very often supplied with handles or perforated knobs, either upon the shoulder or the neck. In a few cases only the necks are high and slender like the bottles of the mound-builders of the middle Mississippi region.

The vessel illustrated in Fig. 335 is not properly classified either with the preceding or with the following group, but I place it here on account of its peculiar painted device, which appears in other forms and connections in the two succeeding figures. The ornament as usual occupies two zones, each of which has three groups of vertical lines alternating with as many star-like figures resembling somewhat the Maltese cross. The latter device may possibly have been introduced to represent some idea, and I have no doubt that almost any member of the modern tribes

could be induced to give a full explanation of its significance. It would, however, be his idea only and not necessarily that of the ancient potter.

FIG. 335.—Vase: Province of Tusayan.—$\frac{1}{3}$.

HANDLED VESSELS.—Handled vessels of this province are greatly varied. Examples of the dippers have already been given. Besides them there is a long series of vessels with more or less constricted necks, the

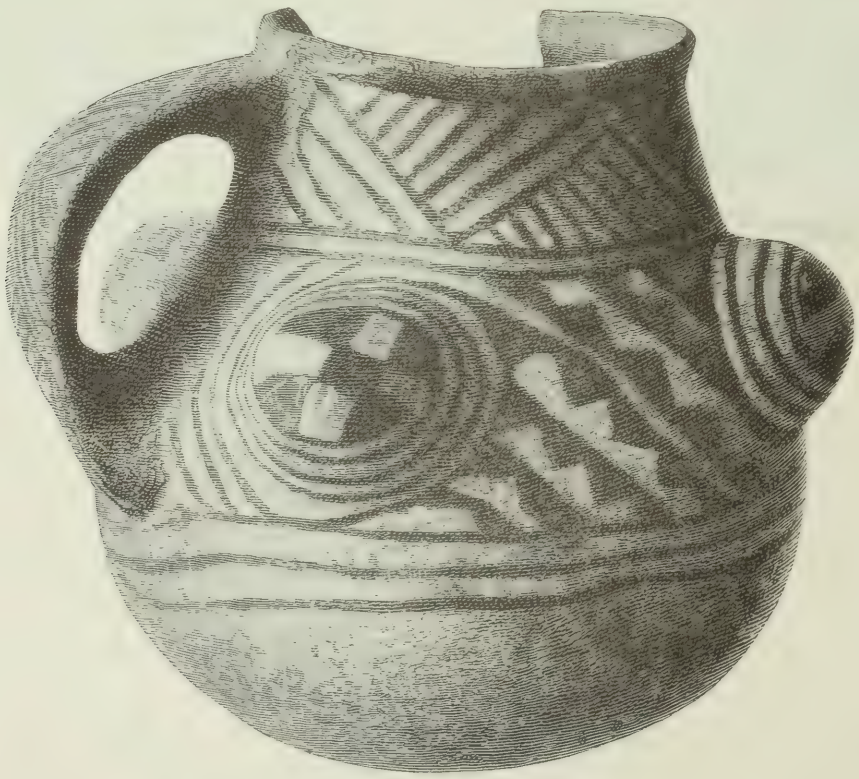


FIG. 336.—Handled vase: Province of Tusayan.—$\frac{1}{2}$.

handles of which are of three or four pretty distinct varieties, including the long vertical loop connecting the rim with the shoulder or body, the

strong horizontal loop set at the base of the neck, and the perforated knob placed upon the shoulder. There are also a few examples of cup-shaped projections, Fig. 351, and heads of animals, Fig. 352, which are set upon the neck near the rim and seem to be survivals of handles or ornaments merely.

The vessel shown in Fig. 336 has an interesting combination of decorative features. I present it here, although a little out of place in my

FIG. 337.—Painted design.

classification by form, in order to point out the similarity between its decoration and that of Fig. 335. It is a handsome mug of hard gray ware, finished with a white slip, and decorated with painted designs in the prevailing arrangement. Four equidistant nodes of large size are placed about the shoulder of the vessel. These occur along the middle of the lower zone of painted devices, the notable feature being that the

FIG. 338.—Handled mug: Province of Tusayan.—$\frac{1}{2}$.

volutes of the painted scroll-work encircle the nodes and inclose, between their interlinked points, cross-like devices, resembling those found upon the preceding specimen. These crosses occupy the apices of the nodes, as shown in the illustration. The painted design is given in Fig. 337.

The design proper—the interlinked scrolls—is in white, the dark color being used as a ground to develop it. This is true of a great majority of the examples presented. The same device, with a slightly different combination, is seen in Fig. 338, which illustrates a small jug from the

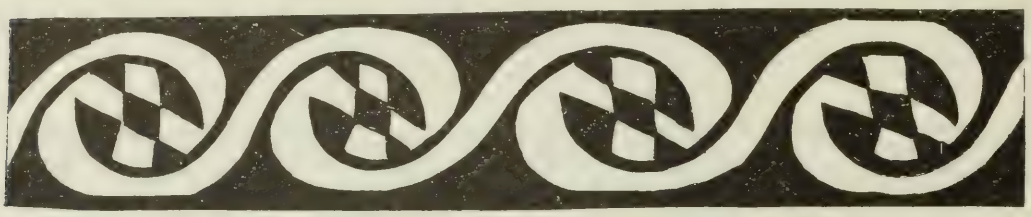


FIG. 339.—Painted design.

Keam collection. The design is well shown in Fig. 339, and in this case it will readily be seen that the motive proper is in white, while the black hooks and the connecting lozenge-shaped figures, forming the cross, represent the ground. This association of the cross with the linking of

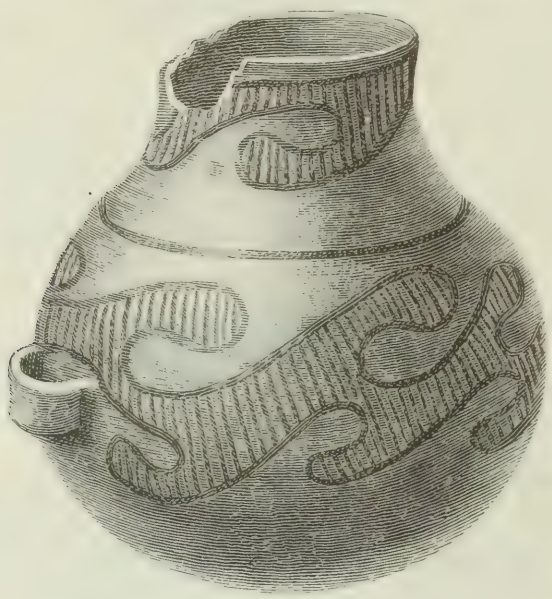


FIG. 340.—Vase: Province of Tusayan.—$\frac{1}{3}$.

the scrolls is suggestive of a possible origin of the device as used independently in the instance given in Fig. 335.

I shall now present a small group of handled vessels of varying char-

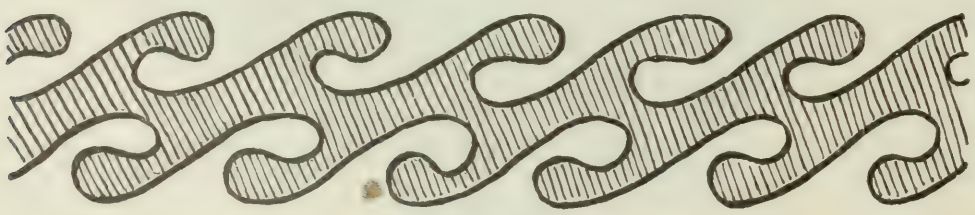


FIG. 341.—Painted design.

acters upon which we have some illustrations of a peculiar treatment of meander motives.

The vessel illustrated in Fig. 340 belongs to the Keam collection. The decoration is very simple and consists of a novel combination of running scrolls. The design is produced by filling in the space between two separate chains of scrolls in black with fine oblique lines, Fig. 341.

FIG. 342.—Handled cup: Province of Cibola.—$\frac{1}{3}$.

Identical treatment of the meander is found upon a mug brought from Zuñi and illustrated by Mr. Stevenson in the Second Annual Report of the Bureau of Ethnology. Fig. 342. This will be apparent when the

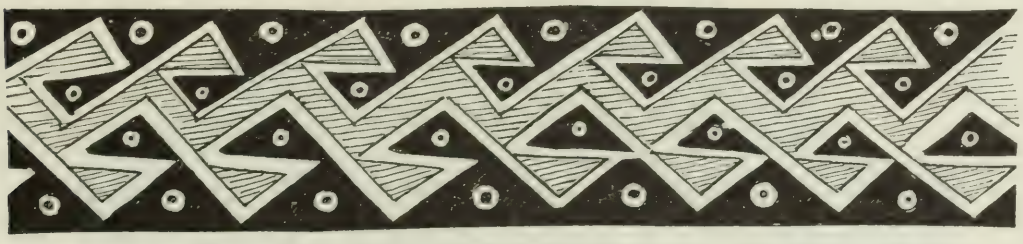


FIG. 343.—Painted ornament.

design, Fig. 343, is placed by the side of the preceding. The first is drawn in curved black lines, the ground remaining white, the second is in rectilinear white lines, the ground being black.

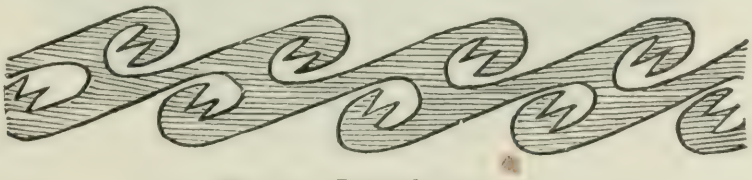


FIG. 344.—Painted ornament.

Two others of like character, one angular and the other curvilinear, are found upon small red vessels from Tusayan, Figs. 344 and 345. Still

another noteworthy example is found upon the interior surface of a red bowl from Cibola, which, when projected in a straight line, gives the handsome ornament illustrated in Fig. 346.

FIG. 345.—Painted ornament.

There is in the Keam collection a very interesting vessel, having two heavy horizontal loops attached to opposite sides of the body. The

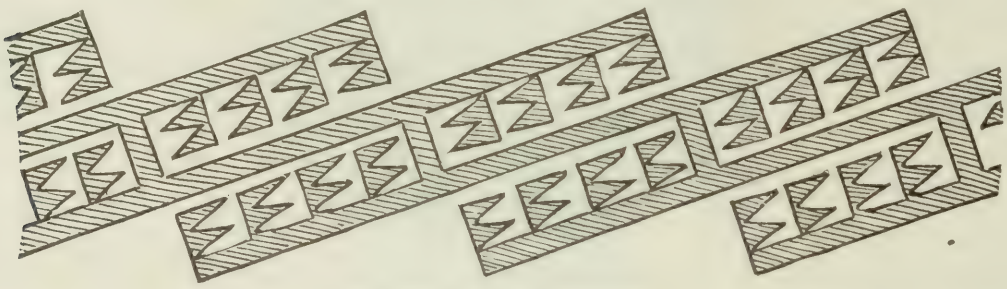


FIG. 346.—Painted ornament.

painted figure consists chiefly of a rectangular meander in white bordered by black and forming a wide zone about the body of the vessel. The spaces are filled in with fine parallel oblique lines. With the addi-

FIG. 347.—Handled vase: Province of Tusayan.—$\frac{1}{3}$.

tion of a foot this vessel would be found to resemble, in both form and ornament, some early varieties of the Greek kylix.

The wide-mouthed vase shown in Fig. 348 differs very decidedly in style from the last. It is finer in texture and much more carefully finished. The form is decidedly antique. The painted design is quite

indistinct, the color having rubbed off or faded out. The work has been neatly done with a fine brush and exhibits some new features in point of detail. If we trace out the figures, however, we will see that there

FIG. 348.—Vase: Province of Tusayan.—$\frac{1}{3}$.

are no new motives, the meander forming the basis of all. There is a double line of figures, the upper one being the more simple, as usual.

In the bottle illustrated in Fig. 349 the usual motives have been em-

FIG. 349.—Bottle: Province of Tusayan.—$\frac{1}{2}$.

ployed. A few heavy lines serve to give emphasis to the lip, while a band of linked scrolls is carried around the shoulder, bordered by simple parallel lines. Unpretentious as the work is, it has a very pleasing effect. The shape is repeated in modern Pueblo pottery. It is the

original of the canteen, which has acquired the flattened form through accident, or change in the habits of the people employing it. A very superior example of these bottles is given in Fig. 350. The body is somewhat flattened and the sides are nearly perpendicular, giving two

FIG. 350.—Bottle: Province of Tusayan.—½.

well defined spaces for decoration, the one above and the other about the middle of the body. The latter space is occupied by a very slender, meandered line in white, the interspaces being filled in with black. Four links encircle the vessel, two oblong ones occurring upon the sides

FIG. 351.—Bottle: Province of Tusayan.—½.

and two short ones beneath the handles. The upper surface is decorated with a band of scrolls, four in number, partially defined in white by painting the space on one side black. There are two low, knob-like, vertically perforated handles on the shoulder of the vessel.

The vessel shown in Fig. 351 is interesting on account of the peculiar knobs or ears placed on the sides of the neck, near the lip. They rudely resemble the corolla of a flower, but suggest as well the wheel-like coils of hair gathered up at the sides of the head by the women of Moki. They were probably associated with some superstition of the ancients. The neck of the bottle is unusually high. The shape is quite graceful and the painted decoration is simple and effective.

In a collection recently sent from the vicinity of Springerville, Arizona, by E. W. Nelson, there are a number of vessels similar in appearance to the preceding, but with shorter necks and rounder bodies. They are small, well-finished, and in some cases quite new-looking. The designs in black are nicely executed and exhibit considerable refinement of taste. One having a small animal head attached to the side of the neck is illustrated in Fig. 352. A broad meandered border encircles the neck, and

FIG. 352.—Vase: Eastern Arizona.—½.

a superb pattern, consisting of four ingeniously combined horizontal chains of meanders in white covers the upper three fourths of the body.

Eccentric and life forms.—In the collection made by Mr. Nelson there are several eccentric forms. One, a two-storied vessel of good proportion, neat finish and ornamentation, is illustrated in Fig. 353. The form is an exceptional one in the ancient ware, but is frequently seen in modern work of the Pueblos and other tribes. It had its origin perhaps in a double-lobed form of the gourd, or possibly the idea was suggested by the superposition of one vessel upon another.

As previously observed, the Pueblo ware is characterized, in a general way, by great simplicity of form. There is, however, one small group of eccentric forms within which we find a pretty wide range of outline, a few specimens exhibiting undoubted resemblances to life forms. Nearly all are bottles with handles and lobed bodies, often unsymmetrical.

The handle in each case connects the lip with the shoulder or body of the vessel. The lobes are generally three in number and are rarely of equal dimensions, one being more or less prolonged.

FIG. 353—Vase of eccentric form: Eastern Arizona.—⅓.

It is very difficult to say where these curious forms originated, or in what direction they were developing. Did the archaic potter, by exaggerating the accidental eccentricities of early and simple forms, arrive at these grotesque shapes, did use determine their conformation, or must we look for their originals in antecedent utensils derived from, or made in direct imitation of, life forms?

FIG. 354.—Vase of eccentric form: Tusayan.—½.

It is manifestly useless to seek for their antecedents within the limits of the ceramic art. A few are of such a shape as to suggest the skin vessels so often used by primitive peoples, and their origin in this

manner would be entirely consistent with the laws of art growth. One variety is shaped somewhat like a shoe or moccasin. Another takes the form of a bird. In regard to their origin it would indeed be a marvel if they should be found to represent an intermediate step between the skin vessels of primitive peoples and the conventional pitcher of civilization, as corresponding shapes are thought to do in Eastern countries.

FIG. 355.—Vase of eccentric form: Tusayan.—½.

Within the Pueblo province these vessels are widely but not very generally distributed, so far as specimens at hand show. I have already described two examples, Figs. 255 and 256, from Saint George, Utah, which are of the simplest type, having three nodes with no suggestion of life form.

FIG. 356.—Vase of eccentric form: Tusayan.—½

In Fig. 354 we have a small, well-finished cup of white ware, from Tusayan, similar in outline to the Saint George specimens. One of the three somewhat pointed nodes is considerably more prominent than the others. The handle is unique, being modeled apparently after the curved neck of a gourd, the pointed tip touching but not uniting with the body of the vessel. This vessel is handsomely decorated with two bands of scrolls. That upon the neck is of a usual form consisting of three sets of linked scrolls with zigzag or stepped connecting fillets. The scrolls of the lower bands interlock upon the three nodes and are

connected by broad Z-shaped stems also stepped or notched. This specimen is from the Keam collection.

Another smaller vessel, still more unique in character, is illustrated in Fig. 355. One of the nodes is very much prolonged, giving, with the upright neck, a form rudely suggestive of a bird. The ornament, like the last, consists of two bands. The upper is of diamond-shaped figures in white upon a black ground, and the lower of a cleverly managed meander, which is made to conform neatly to the eccentricities of the body. The hooks encircle the nodes as in the preceding case.

A smaller specimen is given in Fig. 356. The node next the handle being prolonged resembles the tail of a bird, while the other nodes, which would occupy the place of the two prominences of the breast, are barely suggested. The decoration is extremely simple.

A fine specimen of these novel vessels is illustrated in Fig. 357. The body is much prolonged on one side and has no prominence whatever at the breast points. The handle is but slightly arched and connects the rim with the extreme point of the projecting lobe. There is here a rather decided suggestion of a skin or intestine vessel. It is but a step from this form to the well-known shoe or moccasin shape of a later

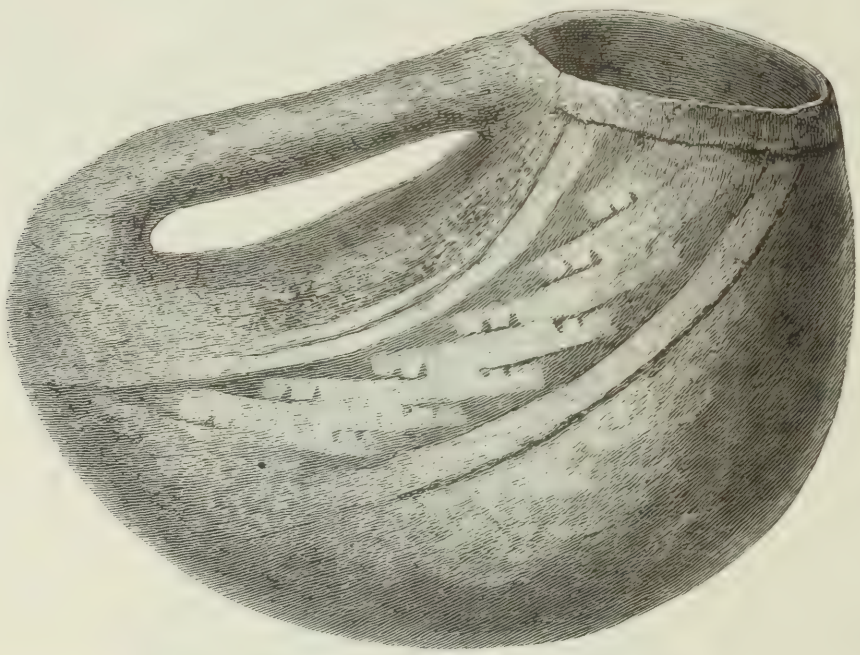


FIG. 357.—Vase of eccentric form: Tusayan.—$\frac{1}{2}$.

period of Pueblo art, a form known in nearly all centers of ancient American culture. The decoration is simple and unique, consisting of a meandered figure in white upon a black ground, with parallel bordering lines in black. It connects opposite sides of the rim passing beneath the projecting lobe.

A number of the best examples are in the National collection. One of these, Fig. 358, is figured by Mr. Stevenson in the Third Annual Report of the Bureau of Ethnology. It might be described as shoe-shaped, yet we are forcibly reminded of the headless body of a bird, the rather

square projecting breast being a marked feature. The painted ornament consists of broad zigzag, meandered bands filled in with fine oblique stripes.

One of the finest specimens is presented in Fig. 359. The triangular or three-lobed form of body is still noticeable, two of the points forming the breast, and the other, much prolonged, standing for the tail of the bird. The meaning of the latter feature is made plain by the painted figure. A conventional design, consisting of concentric, plain and zigzag lines, occupies the back, and terminates behind in a row of pinnate marks, evidently a conventional drawing of the tail. The wings are indicated at the sides by a design like that upon the back. The breast is embellished with a series of oblong dots probably intended for feathers. In this case the neck, which is high and narrow, has three prominences near the top; one at the front represents the bill of the

FIG. 358.—Vase of eccentric form: Cibola.—$\frac{1}{3}$.

bird, and others at the sides are meant for eyes. A handle has connected the head with the middle of the back. This is nearly all broken away and the stumps have been perforated for the insertion of cords. A serrate collar in black encircles the neck. The original of this vase was obtained in the Pueblo country and belongs to Dr. Sheldon Jackson. A specimen recently acquired by the National Museum is superior to this in its decorative treatment. The body has four lobes, one for the breast, another for the tail, and one for each of the wings. Each of these lobes is made the center about which the volutes of the very elaborate scroll-work are turned.

I shall give one more illustration, Fig. 360. This is taken from the Keam collection and represents a bird. The vessel is quite distinct in

shape from those previously given, being much like the bird vessels of the mound-builders. It is a cup with constricted rim, the head, tail, and wings of the bird projecting horizontally from the outer margin of

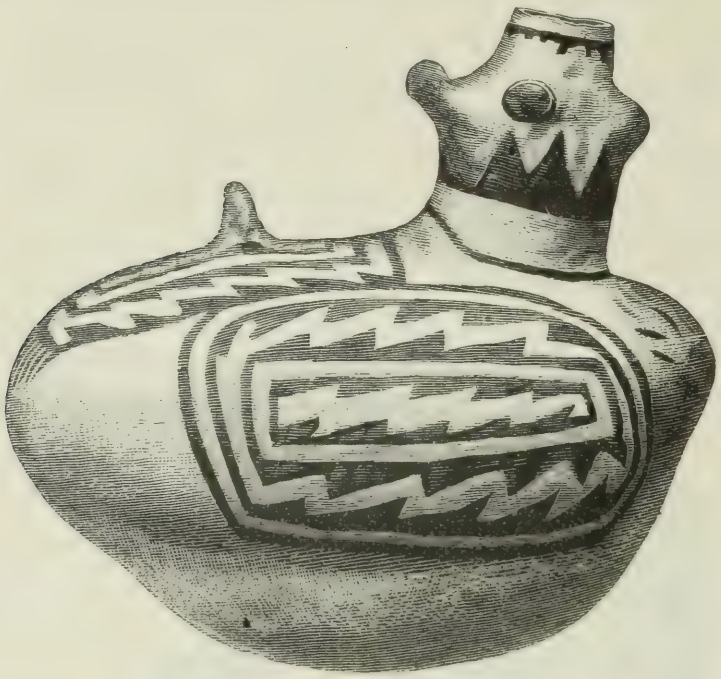


FIG. 359.—Bird-shaped vase: Arizona.—$\frac{1}{3}$.

the rim. It is of the white ware and has had a painted design in black lines, now nearly obliterated.

FIG. 360.—Bird-shaped cup: Tusayan.—$\frac{1}{2}$.

CONCLUDING REMARKS.

Two great groups of ceramic products have now been presented—the coiled ware and the white decorated ware. These groups belong to the first great period of pueblo art in clay. Their chronological identity is sometimes questioned, the coiled ware to all appearances being the more archaic. It is simple in form and rude in finish, is without painted ornament, and was relegated to the more ordinary uses. These and other features give countenance to the theory of greater antiquity; but the

intimate association of the two groups in nearly every locality indicates close indentity in time. It cannot be said that the other classes of ware found within the same province belong to different times or to distinct races, but they are widely separated in many important characters from the two leading groups. They exhibit greater variety of form, less constraint in decoration, and greatly improved technique, points tending to prove advance in culture, and, presumably, in time.

The more closely the ceramic art of the ancient peoples is studied the more decidedly it appears that it was profoundly influenced by the textile arts, and especially by basketry. The latter art was practiced from remote antiquity, and within historic times the manufacture of baskets has been the most important industry of the tribes of the Pacific slope of temperate North America. Ceramic shapes, wherever found within this region, coincide closely with textile outlines, and the geometric ornamentation can be traced to textile prototypes originating in the technical peculiarities of construction.

Another point brought out by the preceding studies follows naturally the foregoing statement. There are in the pueblo country no primitive forms of earthenware. This may lead to the inference that the pueblo tribes migrated from other regions in which the earlier stages of the art had existed, but taken in connection with the lack of individuality in the potter's art, and its evident dependence upon the textile art, it leads decidedly to the conclusion that art in clay was acquired by these tribes in comparatively recent times. The ancient pueblos practised the art of basketry, but clearly remained ignorant of the plastic art, until by some accident of environment it was introduced or discovered. Under the influence of the sister art, pottery at once took a high stand. During the first stages, however, it was a servile art, reproducing the forms and decorations of basketry. The true plastic characters of clay remained practically undiscovered, and is only now, under the influence of the European, dawning upon the conservative mind of the inhabitant of the plateaus.

Besides basketry, it is probable that the early pueblos made use of gourds and of tissue vessels, traces of their influence occurring quite frequently, but there is no indication whatever of the presence of carvings in shell, wood, and stone.

I do not wish in this place to dwell upon the details of pueblo ornament. A single example will serve to illustrate the origin and character of the leading decorative conceptions. Glancing through the series of vases illustrated under painted ware, we find that ninety-four out of one hundred designs are meanders, or are based upon the meander. Beginning with the simple waved or broken line we pass up through all grades of increasing complexity to chains of curvilinear and rectilinear meanders in which the links are highly individualized, being composed of a sigmoid line, terminating in reversed hooks; but in no

case do we reach a loop in the curved forms or an intersection in the angular forms. The typical intersecting Greek fret does not therefore occur, nor, I may add, is it found anywhere in native American art.

The constructional characters of the art in which these linear forms developed, although they encouraged geometrical elaboration, forbade intersections or crossings of a line upon itself, and the genius of the decorator had never freed itself from this bondage. The forms imposed upon decoration by the textile art are *necessarily* geometric and rectilinear, and their employment in other and less conventional arts, has been too limited to destroy or even greatly modify these characters.

The study of Pueblo art embodied in the preceding pages tells the simple story of the evolution of art—and especially of decorative art—in a period when the expanding mind of primitive man, still held in the firm grasp of instinctive and traditional methods—the bonds of nature—was steadily working out its æsthetic destiny.

SMITHSONIAN INSTITUTION——BUREAU OF ETHNOLOGY.

ANCIENT POTTERY

OF THE

MISSISSIPPI VALLEY.

BY

WILLIAM H. HOLMES.

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ANCIENT POTTERY OF THE MISSISSIPPI VALLEY.

By WILLIAM H. HOLMES.

INTRODUCTORY.

This paper is the third of a series of preliminary studies of aboriginal ceramic art which are intended to be absorbed into a final work of a comprehensive character.

The groups of relics selected for these studies are in all cases of limited extent, and are such as can lay claim to a considerable degree of completeness. It is true that no series of archæologic objects can ever be considered complete, but in exceptional cases the sources of supply may be so thoroughly explored that the development of new features of importance cannot reasonably be expected. If any series of American ceramic products has reached such a condition, it is that of the middle portions of the Mississippi Valley; yet, even in this case, I consider it unwise to attempt a monographic study, and prefer to single out a particular collection, making it the subject of a thorough investigation.

When the idea of preparing such a paper was first conceived, the collection presenting the greatest advantages was that of the Academy of Natural Sciences at Davenport, Iowa, which was, therefore, chosen. Other museums, especially those at Cambridge, Saint Louis, and Washington, were rich in material from this region, but none of these collections were so homogeneous and satisfactory.

The National Museum has recently received important accessions from the Mississippi Valley, through the agency of the Bureau of Ethnology, and ere the publication of this paper will probably excel all others in the number and variety of its mound relics. Some of its material has already been published by Dr. Charles Rau, Prof. C. C. Jones, Dr. Joseph Jones, and myself, and several additional examples are given in this paper.

Professor F. W. Putnam has described and illustrated many pieces belonging to the Peabody Museum, and Professor W. B. Potter and Dr. Edward Evers have issued an important work on the Saint Louis collections, in Contributions to the Archæology of Missouri.

This study is intended to pave the way to a thorough classification of the multitude of relics, and to the discovery of a method of procedure suited to a broad and exhaustive treatment of the ceramic art.

I do not expect to discuss ethnical questions, although ceramic studies will eventually be of assistance in determining the distribution and migrations of peoples, and in fixing the chronology of very remote events in the history of pottery-making races.

Some of the results of my studies of the evolutionary phase of the subject are embodied in an accompanying paper upon the "Origin and Development of Form and Ornament," and a second paper will soon follow. Before the final work is issued I hope to make close studies of all the principal collections, public and private. In such a work the importance of great numbers of examples cannot be overestimated. Facts can be learned from a few specimens, but relationships and principles can only be derived from the study of multitudes.

I shall probably have occasion to modify many of the views advanced in these preliminary papers, but it is only by pushing out such advance guards that the final goal can be reached.

Since the original issue of this paper in the Proceedings of the Davenport Academy of Sciences, a careful revision of the text has been made and much additional matter and a number of illustrations have been added.

I wish in this place to express my obligations to the officers and members of the Davenport Academy of Sciences, and especially to Mrs. M. L. D. Putnam and Prof. W. H. Pratt, whose generous aid has been of the greatest service to me.

CERAMIC GROUPS.

In studying the collections from the Mississippi Valley, I find it convenient to classify the ceramic products in three great groups, which belong to as many pretty well-defined districts; these I have named, for convenience of treatment, the Upper Mississippi, the Middle Mississippi, and the Lower Mississippi or Gulf provinces. Other pottery occurs within the limits of these areas, but the examples found in the museums are so few that very little of importance can be learned from them.

The three groups enumerated are not equally represented. The great body of our collections is from the middle province. The ware of the Lower Mississippi or Gulf district, of which we have but a small number of pieces, has many features in common with the pottery of the middle district, and at the same time is identical in most respects with that of the Gulf coast to the east. No well-defined line can be drawn between them; but the ware of the north is wholly distinct and need never be confounded with the other groups.

MIDDLE MISSISSIPPI PROVINCE.

DISTRIBUTION.—It must not be inferred that there is perfect uniformity in the pottery of this, or any other, extended region; local peculiarities are always to be found. The products of contiguous districts, such, for example, as those of Mississippi County, Arkansas, and New Madrid County, Missouri, have much in common, and will at once be recognized as belonging to the same family, yet the differences are so marked that the unskilled observer could point them out with ease.

As indicated by decided family resemblances, the wares of this group extend over the greater part of the States of Missouri, Arkansas, and Tennessee, cover large portions of Mississippi, Kentucky, and Illinois, and reach somewhat into Iowa, Indiana, Alabama, Louisiana, and Texas. The types are better marked and the products more abundant about the center of this area, which may be defined roughly as including contiguous parts of Missouri, Arkansas, and Tennessee, with a pretty decided focal center, at least in the abundance of relics, at Pecan Point, Arkansas.

The borders of the district are necessarily not clearly defined. The characters of the art products blend more or less with those of neigh-

boring sections. This is a usual phenomenon, and is probably due to a variety of causes. The mere contact of peoples leads to the exchange of ideas, and, consequently, to similarities in the products of industry. A change of habitat, with its consequent change of environment, is capable of modifying art to a great extent. Groups of relics and remains attributed by archæologists to distinct stocks of people, may, in cases, be the work of one and the same people executed under the influence of different environments and at widely separated periods of time.

Mixed conditions in the remains of a locality are often due to the presence of different peoples, synchronously or otherwise. This occurs in many places on the outskirts of this district, a good illustration being found in East Tennessee, where three or four distinct groups of ware are intermingled. As would naturally be expected, the distribution is governed somewhat by the great water-ways, and pottery of this province is found far up the Ohio, Tennessee, and Arkansas Rivers.

How found.—All peoples have resorted, at some period of their history, to the practice of burying articles of use or value with the dead. It is to this custom that we owe the preservation of so many entire pieces of these fragile utensils. They are exhumed from burial mounds in great numbers, and to an equal extent, perhaps, from simple, unmarked graves which are constantly being brought to light by the plowshare. Fragmentary ware is found also in refuse heaps, on house and village sites, and scattered broadcast over the face of the land.

This pottery, at its best, was probably not greatly superior in hardness to our own soft earthenware, and the disintegrating agencies of the soil have often reduced it to a very fragile state. Some writer has expressed the belief that a considerable portion of the ware of this province was sun-baked merely. This view is hardly a safe one, however, as clay, unmixed with lime or other like indurating ingredient, no matter how long exposed to the rays of the sun, would, from ages of contact with the moist earth, certainly return to its original condition. I have seen but few pieces that, even after the bleaching of centuries, did not show traces of the dark mottlings that result from imperfect firing. There probably was a period of unbaked clay preceding the terra-cotta epoch, but we cannot expect to find definite traces of its existence except, perhaps, in cases where large masses, such as mounds or fortifications, were employed.

The relations of the various articles of pottery to the bodies with which they were associated seem to be quite varied. The position of each vessel was determined by its contents, by its symbolic use, or by the pleasure of the depositor. Uniformity cannot be expected in this more than in other features of burial. In other sections of the country the pieces of pottery are said to have been broken before final inhumation took place, but such was certainly not the practice in this province.

AGE.—There can be no reasonable doubt that the manufacture of this ware began many centuries before the advent of the white race, but it is equally certain that the art was extensively practiced until quite recent times. The early explorers of Louisiana saw it in use, and the processes of manufacture are described by Dumont and others.

Possibly Du Pratz had in mind some of the identical vessels now upon our museum shelves when he said that "the women make pots of an extraordinary size, jars with a medium-sized opening, bowls, two-pint bottles with long necks, pots or jugs for containing bear's oil, which hold as much as forty pints, and finally plates and dishes in the French fashion."[1]

Vessels were certainly made in great numbers by the Natchez and other tribes within our period, and it is reasonable to suppose that they belonged to the great group under discussion. If not, it will be necessary to seek the cause of their total disappearance, since, as I have already said, the pottery of this district, as shown by the relics, is practically a unit.

The introduction of metal utensils was a death-blow to the native industry, although some of the southern tribes, the Cherokees, for example, seem to have practiced the art continuously, in a very limited way, down to the present time. There is but little evidence of the influence of the art of the whites upon the ceramic products of this province, although the forms are sometimes thought to be suggestive of European models. It is certain, however, that the art had reached its highest stage without the aid of civilized hands, and in the study of its many interesting features we can feel assured that we are dealing with purely aboriginal ideas.

The pottery of this province is remarkably homogeneous in character, and we are warranted in assigning it to a single period of culture, and, in concluding, that the peoples who developed and practiced the art belonged to a group of closely-allied tribes. We can also state without fear of precipitating a controversy that the people who made this pottery were "mound-builders." At the same time, they were not necessarily of the same people as the builders of the mounds of Wisconsin, Ohio, or Georgia or contemporaneous with them.

USE.—It is difficult to determine the functions of the various forms of vessels. We are safe in stating that in very primitive times nearly all were intended for use in the domestic arts, and that as time went on uses were differentiated—form, as a consequence, undergoing many changes. Early writers on the Southern States mention a number of ordinary uses, such as cooking, the carrying and boiling of water, the manufacture of sugar and salt, and the preservation of honey, oil, and paint.

Only a small percentage of the vessels, and these generally of the pot-shaped variety, show indications of use over fire. It is well known

[1] Du Pratz: Histoire de la Louisiane, Vol. II, p. 179.

that with most peoples particular forms were devoted to especial ceremonial uses. The construction of vases exclusively for mortuary purposes was probably not generally practiced, although a few examples, notably those illustrated in Figs. 372 and 420, point decidedly in this direction.

The simple conditions of life with these people are indicated by the absence of certain forms. Lamps, whistles, toys, bricks, tiles, and other articles in common use with many barbaric nations, are not found in this province. Pipes, so neatly shaped by other mound-building peoples, are here of a very rude character, a point indicating decided distinctions between the tribes of this province and those of neighboring sections.

CONSTRUCTION.—The methods of manufacture have evidently been of a primitive character. The wheel or lathe has not been used. At the advent of the whites, the natives were observed to build their vessels by a process known as "coiling," and by modeling over gourds, and over blocks of wood and masses of indurated clay shaped for the purpose.

It is probable that in many cases the support was not a mold in the ordinary sense, but was simply a rounded object of small size held in one hand while the base of the vessel was formed over it by the other. Rounded pebbles, or the mushroom-shaped objects of clay sometimes found in the mounds, would have served the purpose perfectly. Trowels, paddles, stamps, polishing-stones, and other implements were used in finishing.

Baskets were also used as molds, and pliable fabrics, such as nets and coarse cloths, were employed in some sections. The methods of baking have apparently not been described in much detail by early writers, but the ware itself bears the marks of those simple processes known to our modern tribes. It is highly probable that the work was done by the women, and that each community had its skilled potters, who built and baked the ware in the open air, going through those simple mummeries that accompany the work among most primitive peoples.

MATERIAL.—The material employed was usually a moderately fine-grained clay, tempered, in a great majority of cases, with pulverized shells. The shells used were doubtless obtained from the neighboring rivers. In many of the vessels the particles are large, measuring as much as one-fourth or even one-half of an inch in width, but in the more elegant vases the shell has been reduced to a fine powder. Powdered potsherds were also used. The clay was, apparently, often impure or loamy. It was, probably, at times, obtained from recent alluvial deposits of the bayous—the sediment of overflows—as was the potter's clay of the Nile. There is no reason for believing that the finer processes of powdering and levigation were known. A slip or wash of very finely comminuted clay was sometimes applied to the surface of the vessel. The walls of the vessels are often thick and un-

even, and are always quite porous, a feature of no little importance in the storage of drinking-water, but one resulting from accident rather than from design.

COLOR.—The paste of this ware presents two marked varieties of color, a dark and a light hue. In a majority of cases it is dark, ranging from a rich black to all shades of brown and gray. The lighter tints are usually warm ochrey grays, rarely approaching reddish or terra cotta hues. It is highly probable that the differences of color were, to some extent, intentionally produced, and that the material or methods of firing were regulated in a way to produce one tint or another at pleasure. This theory is confirmed by the fact that certain forms of vases are pretty generally dark, while certain other forms are as uniformly light—the latter in nearly all cases being used for the application of color, or of designs in color.

FORM.—This ware exhibits a great variety of forms, many of which are extremely pleasing. In this respect it is far superior to the other prehistoric groups of the eastern United States. The shapes are as varied and elegant as those of the ancient Pueblo pottery, but are inferior to those of Mexico, Central America, and Peru. They take a higher rank than the prehistoric wares of central and northern Europe, but as a matter of course lack the symmetry and refinement of outline that characterize the wheel-made wares of Mediterranean countries.

As I classify by form farther on, and discuss the origin of form as each form-group is presented, I shall not make further reference to this topic here.

FINISH.—The finish, as compared with the work of civilized nations, is rude. The surface is often simply hand or trowel smoothed. Generally, however, it was more or less carefully polished by rubbing with an implement of stone, shell, bone, or other suitable substance, the markings of these tools being distinctly visible. Nothing resembling a glaze has been found on pieces known to be ancient. The surface was sometimes washed or coated with a slip or film of fine clay which facilitated the polishing, and in very many cases a coat of thick red ocher was applied.

ORNAMENT.—The ancient potter of the middle province has taken especial delight in the embellishment of his wares, and the devices used are varied and interesting. They include, first, fanciful modifications of form; second, relief ornament; third, intaglio figures; and, fourth, designs in color.

Modification of shape.—It can hardly be claimed that the ancient peoples of this region had a very refined appreciation of elegance of outline, yet the simple, essential forms of cups and pots were by no means satisfactory to them. There are many modifications of shape that indicate a taste for higher types of beauty, and a constant attempt to realize them. The æsthetic sentiment was considerably developed.

There is also a decided tendency toward the grotesque. To such an extreme have the dictates of fancy been followed, in this respect, that utility, the true office of the utensil, has often taken a secondary place, although it is never lost sight of entirely. Bowls have been fashioned into the shapes of birds, fishes, and reptiles, and vases and bottles into a multitude of animal and vegetable forms without apparent regard to convenience. All of these modifications of essential forms were doubtless looked upon as, in a sense, ornamental. So far as I can determine they were in no case intended to be humorous.

Relief ornament.—Decorative ideas of a purely conventional character are often worked out in both low and salient relief. This is generally accomplished by the addition of nodes and fillets of clay to the plain surfaces of the vessel. Fillets are applied in various ways over the body, forming horizontal, oblique, and vertical bands or ribs. When placed about the rim or base, these fillets are often indented with the finger or an implement in a way to imitate, rudely, a heavy twisted cord—a feature evidently borrowed from basketry. Nodes are likewise attached in various ways to the neck and body of the vessel. In some cases the entire surface of the larger vessels is varied by pinching up small bits of the clay between the nails of the fingers and thumb. An implement is sometimes used to produce a similar result.

Intaglio designs. — The æsthetic tendencies of these potters are well shown by their essays in engraving. They worked with points upon both the plastic and the sun-dried clay, as well as at times upon the fire-baked surface. Figures thus produced exhibit a wide range of artistic achievement. They illustrate all stages of progress from the most archaic type of ornament — the use of dots and straight lines — to the most elegant combinations of curves; and, finally, to the delineation of life forms and fanciful conceptions.

Generally, when a blunt implement is employed, the line is produced by a movement that I shall call *trailing*, in contradistinction to *incision*, in which a sharp point is used, and *excision* or *excavation*, which is more easily accomplished with the end of a hollow reed or bone. *Impressed* or *stamped* ornament is of rare occurrence, and anything like *repoussée* work is practically unknown. The practice of impressing cords and fabrics was common among many of the northern tribes, and nets have been used in the manufacture and ornamentation of vases at many points within this province. The use of stamps, especially prepared, was in vogue in most of the Gulf States, and to a limited extent in northern localities.

Designs in color.—The colors used in painting are white, red, brown, and black, and have generally consisted of thick, opaque, clayey paste, white or colored with ochers. Occasionally the colors used seem to have been mere stains. All were probably laid on with coarse brushes of hair, feathers, or vegetable fiber. The figures are in most cases sim-

ple, and are applied in broad, bold lines, indicative of a strong talent for decoration. The forms are, to a great extent, curvilinear, and embrace meanders, scrolls, circles, and combinations and groupings of curved lines in great variety. Of rectilinear forms, lozenges, guilloches, zigzags, and checkers are best known.

The decided prevalence of curved forms is worthy of remark. With all their fertility of invention, the inhabitants of this valley seem never to have achieved the rectangular linked meander, or anything more nearly approaching it than the current scroll or the angular guilloche, while other peoples, such as the Pueblos of the Southwest and the ancient nations of Mexico and Peru found in it a chief resource. The reasons for this, as well as for other peculiarities of the decorative art of the mound-builders as embodied in pottery, must be sought for in the antecedent and coëxistent arts of these tribes. These peoples were certainly not highly accomplished in the textile arts, nor had they felt the influence of advanced architecture such as that of Mexico. The influence of such arts inevitably gives rise to angular geometric figures. Taken as a whole, the remains of the mound-builders would seem to point to a hyperborean origin for both the people and their arts.

The origin of decorative ideas, the processes by which they are acquired by the various arts, and their subsequent mutations of form and significance are matters of the greatest interest, and a separate paper will be devoted to their consideration.

CLASSIFICATION OF FORMS.—Form cannot be made a satisfactory basis of classification, yet within a given group of products, defined by general characters, a classification by shape will be found to facilitate description. In making such a classification we must distinguish essential from non-essential features, that is to say, for example, that bowls must be placed with bowls, bottles with bottles, etc., disregarding the various fanciful modifications given to rims, necks, and bodies for the sake of embellishment. To recognize these adventitious features, which are almost infinite in variety, would be to greatly embarrass form classification.

There is also another difficulty in the employment of form in classification—the nomenclature is very imperfect. We cannot use Greek names, as our forms correspond in a very few instances only with the highly developed forms known to classic art. Our own plain terms, although defective, are better and far more appropriate. All necessary correlations of form can readily be made when the comparative study of the pottery of the world is undertaken.

If we take a full set of these primitive vessels and arrange them in the order of increasing complexity we have an unbroken series ranging from the simplest cup to the high-necked bottle with perforated foot or with tripod. A partial series is shown in the upper line, Fig 361. A

multitude of variations from these outlines are found, a few of which are suggested in the lower line.

FIG. 361.—Scale of forms.

Compound, eccentric, and life forms are given elsewhere.

In deciding upon the order of arrangement for the various form groups, I shall be governed by what appears to be the natural order of evolution—a progress from simple to complex. First then we have basin-like vessels, such as *dishes*, *cups*, and *bowls*. Second, vases with wide mouths and somewhat globular bodies, the larger of which would be very generally recognized as *pots*. Third, vases with full bodies and narrow mouths, such as are often termed *jars*, but which are as properly called bottles. Fourth, vessels with high, narrow necks, universally denominated *bottles*. Vessels that cannot be grouped with either of these classes will have to be described in sub-groups, arranged in the order of their complexity or importance.

ORIGIN OF FORM.—The derivation and subsequent mutations of form will be treated somewhat in detail as the various forms come up, and a subsequent paper will dwell upon the topic at considerable length.

BOWLS.

Basin or bowl-shaped vessels exhibit great diversity of shape and ornament. In size they range from less than one inch in diameter and depth to more than twenty inches in diameter and a foot in depth. In color and finish they are uniform with vessels of the other classes. Their uses were doubtless chiefly domestic.

FORM.—The forms are greatly varied, as will be seen in Fig. 362. Many are simply segments of spheres and vary from a shallow saucer to a hollow perforated globe. Others have elongated, compressed, or

FIG. 362.—Forms of bowls.

conical bodies, with round or flattened bases. Rectangular and irregular forms are sometimes found. Stands and legs are but rarely attached, and handles, excepting those of a grotesque character, are exceptional.

It will probably be safe to assume that some form of shallow vessel—a dish, cup, or bowl, was the first artificial form produced. Such a vessel would be most easily fashioned in clay and may have been suggested by accident, or by natural or artificial vessels.

Whatever the origin or whichever the method of construction, the difficulties encountered would at first prevent the manufacture of other than the simplest forms.

ORNAMENT.—The ornamentation of bowls was accomplished in a variety of ways. These have been already described in a general way, under the head of ornament. Rim modifications constitute an important feature. The margin or lip may be square, oblique, round, or grooved, as indicated in Fig. 363 *a*, *b*, *c*, and *d*. The scallop may be employed as in *e* and *f*, and relief ornament may be added, such as fillets and nodes, and various horizontal projections, as shown in the

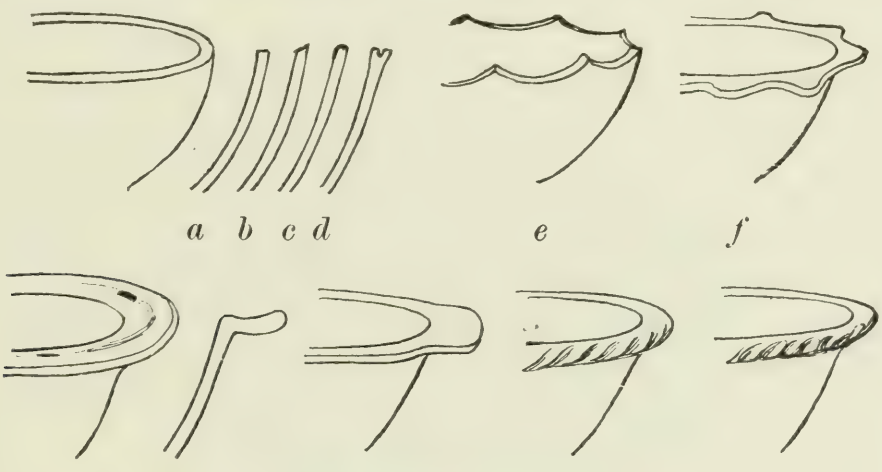


FIG. 363.—Modification of rims.

second line, Fig. 363, to say nothing of incised lines and indentations, which are the heritage of wicker-work.

Not satisfied with these simple ideas of decoration, the fancy of the potter led him to add embellishments of most varied and often of extraordinary character. The nodes and ridges have been enlarged and prolonged, and fashioned into a thousand natural and fanciful forms. Shells, fish, birds, beasts, human and impossible creatures have been utilized in a multitude of ways. Many illustrations of these are given on subsequent pages.

The body of the bowl is somewhat less profusely ornamented than the rim. The interior, as well as the exterior, has received painted, relieved, and intaglio designs. In the painted ones the favorite idea for the interior is a series of volutes, in broad lines, radiating from the center of the basin. Groups of festooned lines, either painted or engraved, and arranged to give the effect of imbricate scales, form also a favorite motive. The exterior surface of the incurved rims of globular vessels offers a tempting surface to the artist and is often tastefully decorated in all the styles.

ILLUSTRATIONS.—*Ordinary forms.*—I have not thought it necessary to present many cuts of simple undecorated vessels, as their shapes are repeated numberless times in elaborated forms. The crude examples teach nothing as to stage of culture. They are of the same time and people as the finer specimens.

The small bowl given in Fig. 364 is unusually well made, and is peculiar in having its interior surface decorated with a rather chaste in-

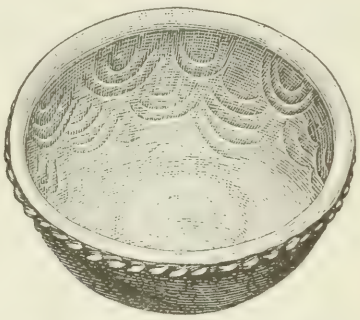


FIG. 364.—Bowl: Arkansas.—⅓.

cised design consisting of festooned lines. This was a favorite idea with the ancient potters and may be seen on both exterior and interior surfaces of a variety of vessels. The rim is beveled on the inner edge and has a beaded or indented fillet encircling the outer margin. The bottom is somewhat flattened. This specimen is from Arkansas.

In Fig. 365 we have a good example of the dark, nicely-finished ware of Arkansas. The widely expanding rim is neatly scalloped on the

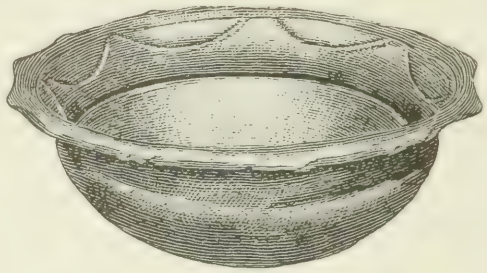


FIG. 365.—Bowl: Arkansas.—⅓.

margin and is finished on the inside with a pattern of incised lines. These lines appear to have been engraved in the hardened clay. The form is rendered graceful by a shallow encircling depression or groove at the base of the rim. The bottom is somewhat flattened.

Occasionally we find very deep bowls with sloping sides and flat bottoms resembling our common flower pots. One example from Arkansas is seven inches in diameter at the top and four at the base, and five inches deep. A heavy band of clay has been added to the outer margin of the rim, leaving a channel above and beneath. A number of perforations occur in this rim, as if made for the passage of thongs or filaments. A similar specimen of larger dimensions may be seen in the National Museum.

We have a number of bowls with incurved rims. This form is more characteristic of the south and is common along the Gulf coast.

A very small example is shown in Fig. 366. The lower part of the body is nearly hemispherical while the rim contracts slightly, giving a rather graceful outline. The exterior is embellished with a simple fig-

FIG. 366.—Cup: Arkansas.—$\frac{1}{3}$.

ure consisting of four linked scrolls which have been traced with a blunt point in the moist clay.

A much larger vessel resembling the above in shape is given in Fig. 367. It is of the dark brownish shell-tempered ware, characteristic of Arkansas. The lip is much incurved and the base considerably flattened, so that the form is that of a greatly compressed oblate spheroid.

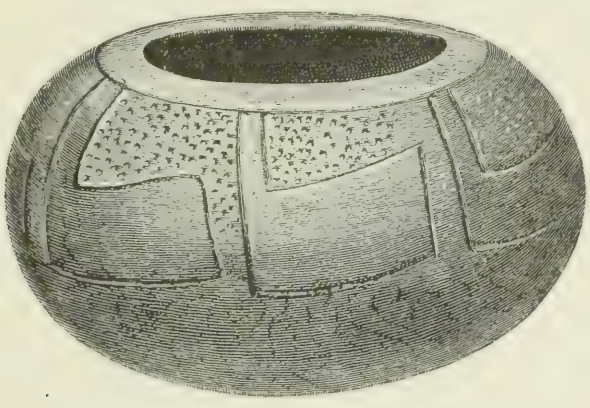


FIG. 367.—Bowl: Arkansas. (?)—$\frac{1}{3}$.

The outer surface has been moderately well polished, and is ornamented in a very effective manner by a series of figures, outlined by incised lines, alternate spaces being filled in with minute punctures.

A favorite form is a bowl with full deep body and incurved lip. A vessel of this class is illustrated in Fig. 368. The rim is but slightly incurved, while the body is considerably constricted below the greatest circumference. It is a unique and handsome specimen. The color of the slip is a pale, reddish-gray, a little darker than an ordinary flesh tint. The paste is seen to be yellowish where the surface has been injured. The ornament is a simple meander, consisting of three incised lines. It is said to have been found in Arkansas. Other bowls of like form and of elegant finish are found in the collection. They are generally dark in color, and have large apertures, low walls and flattened bases. The meander, mostly in its more simple forms, is the favorite decoration.

There are many red vessels of the class under consideration, but the majority are less contracted at the aperture and thus are somewhat pot-shaped. They are rather rudely constructed and finished, and but for the color, would seem to be intended for ordinary cooking purposes. I observe in a number of cases that circular medallion-like ornaments have been set around the rim. These are from one-half to one inch in diameter, and are generally perforated or punctured in two or three places,

FIG. 368.—Bowl: Arkansas.—$\frac{1}{3}$.

apparently with the idea of representing a face. The effect is very much like that of the small perforated disks, riveted upon the exterior of copper or tin kettles for the purpose of attaching handles. Occasionally a tail-like appendage is added to the under side of these discoidal heads, suggesting the tadpole figures upon the sacred water vessels of the Pueblo Indians.

One large basin with slightly incurved rim has a series of triangular figures in red and brown upon both the inner and the outer surfaces. It is rudely finished and of large size, being eleven inches in diameter and seven and a half in height.

Eccentric forms.—Before proceeding with the discussion of life-forms as exhibited in bowls, I must present a few unique shapes.

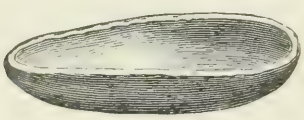


FIG. 369.

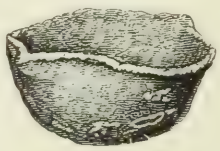


FIG. 370.

Cups: Arkansas (?).—$\frac{1}{3}$.

These consist of ladle-shaped vessels, and of bowls or basins with rectangular, oval, or unsymmetrical outlines. Ladles are of rare occurrence. In the Third Annual Report of the Bureau of Ethnology I have illustrated the best example that has come to my notice. The Davenport collection contains but one specimen—a rude shallow cup with a short thick handle. The form suggests the wooden and horn spoons of the modern tribes and may have originated in their archaic prototypes.

Fig. 369 illustrates a minute cup rudely made of coarse clay. The outline is oval and slightly pointed at one end, as if intended for pouring liquids.

In Fig. 370 we have another small vessel of rude finish with two pointed lips. A much larger vessel of similar shape may be seen in the Davenport collection. The projecting pointed lip is rarely found in aboriginal pottery, although I see no reason why such a feature may not readily have been suggested to the savage by the prolonged margins of his vessels of shell.

Rectangular vessels are of the rude shell-tempered ware, and, although rare, are widely distributed.

Fig. 371 illustrates a specimen from Pecan Point, Arkansas. The surface is rudely finished and without polish. The color is a dark gray, much flecked with large particles of white shell. Another example has

FIG. 371.—Rectangular bowl: Pecan Point, Arkansas.—$\frac{1}{3}$.

a square rim but a rounded bottom, and is covered with a coat or slip of dark red clay.

A small vessel from the same region as the preceding has the rim pressed in on the four sides, leaving sharp, projecting corners.

One of the most notable vessels in the collection is illustrated in Fig. 372. It is a heavy casket consisting of two parts, body and lid, and is made as usual of clay and coarsely pulverized shell. It is brownish gray in color and bears some marks of the baking. It was obtained by Captain W. P. Hall from a low mound at Hale's Point, Tennessee, and is described by Mr. W. H. Pratt, in the following language: "It is of rude, irregular, quadrangular form, made in two parts. The lower, or case proper, is 12 inches long, 7 inches wide, and 5 inches deep, inside measure, the upper edge being slightly bent inward all around. The upper part or lid is of similar form and dimensions, being very slightly larger, so as to close down over the other part, about one and a half inches, and is somewhat more shallow. As the lid does not fit very perfectly, the joint around the edge had been plastered up with clay. When found, it contained the remains of a very small child reduced to dust, except that some of the bones of the skull, jaws, and limbs retained

their form, crumbling rapidly, however, upon removal and exposure to the air. There were also found two or three dozen small shell beads. Excepting the remains described, the case was entirely empty. The case weighs six and a quarter, and the lid just six pounds." This is one of the very few vessels that would seem to have been constructed especially for mortuary purposes.

I wish to add to the list of eccentric forms a singular example from the collection of J. R. Thibault, of Little Rock, Arkansas. As shown in Fig. 373 it is an oblong, trough-like vessel with flat projecting wings at the ends. It is extremely well-finished, with thin walls, symmetrical form, and high polish. The color is quite dark and the material is as usual. The engraved design consists of incised lines, which form a

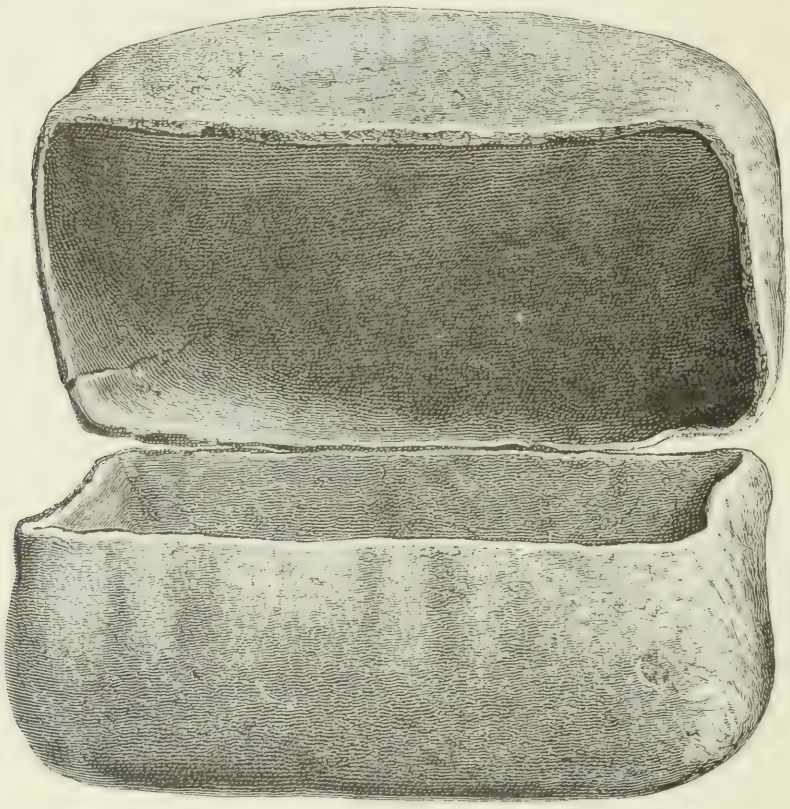


FIG. 372.—Burial casket: Hale's Point, Tennessee.—¼.

number of rectangular compartments extending around the exterior surface of the body. The wings are perforated. The form of this vessel suggests the wooden trays of some modern tribes. A similar example, which is illustrated in the Third Annual Report of the Bureau of Ethnology, is of much inferior interest, being plain and rude.

Life forms.—A very large percentage of the bowls of this district are modified in such a way as to resemble, more or less closely, the form of some living creature—bird, beast, or reptile. Especial attention has been given to the heads. These are modeled in the round and attached to the rim or side, while other parts of the animal appear upon different portions of the vessel.

It will be difficult to determine the origin of this curious practice. We shall not be able to say that it came from the elaboration of handles, simply to please fancy, for the reason that vessels of this class are rarely known to have had simple handles; nor from the modification of simple ornaments, as such were but little used. It is still less probable that animal forms were first modeled independently, and afterwards changed in such a way as to serve as vessels. There are no examples of animal forms in clay independent of vessels. It would not be consistent with primitive methods of procedure to copy nature direct, at least until some mystic significance had become attached to the form employed. It is possible, however, that the origin of this practice is not to be found within the plastic art itself, but in the shapes of antecedent and co-existent vessels of other materials in which life forms had been employed; or in the use of natural objects themselves as utensils, the original forms not having been lost sight of and having in time suggested the employment of other natural forms. Examples of the latter class may be cited.

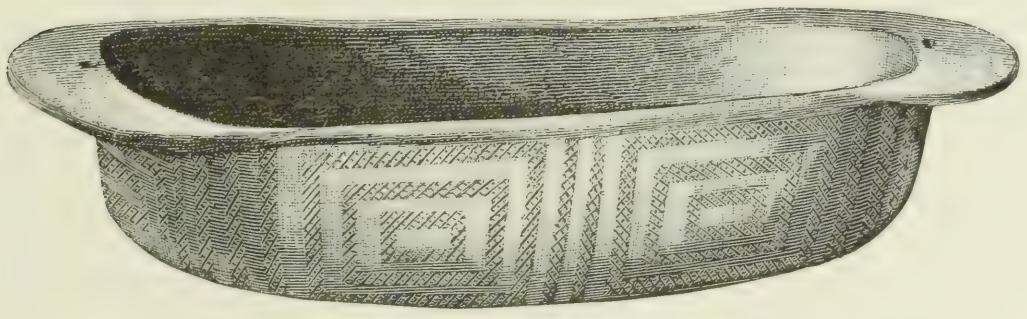


FIG. 373.—Trough-shaped vessel: Arkansas.—$\frac{1}{3}$

[*National Museum.*]

Shells were primitive vessels. The hard cases of seeds and fruits were also much used. These were doubtless antecedent to vessels of clay. They were the natural models for the potter, the carver in wood or stone, and their employment as such served to lead up gradually to a more realistic and general use of natural shapes in works of art to which they were not essential features. The importance of the various animal forms was increased by their association with religious ideas. Nearly all the vessels of this class presented in the following illustrations come from the vicinity of Pecan Point, Arkansas.

Clay vessels imitating both marine and fresh-water shells are occasionally obtained from the mounds and graves of the Mississippi Valley. The conch shell appears to have been a favorite model, especially in its modified form, Fig. 374, *a* and *b*. The clam shell is also imitated in *c* and *d*. The more conventional forms of these vessels are exceedingly interesting, as they point out the tendencies and possibilities of modification. An instructive example illustrated in *e* has four groups of nodes,

each consisting of a large central node with four or five smaller ones, surrounding it, set about the rim, the conception being that of four shells joined in one vessel, with the noded apexes turned outward and the bases inward.

A still more highly conventionalized form is shown in *f*. The cup is unsymmetrical in outline, and has a few imperfect nodes near one cor-

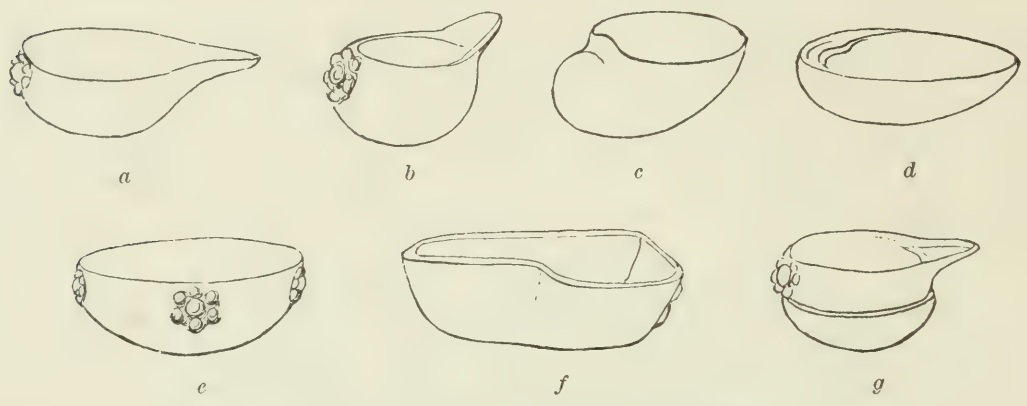


FIG. 374.—Clay vessels imitating shells.

ner, but its resemblance to a shell would hardly be recognized by one unacquainted with more realistic renderings of like subjects. In *g* we have an imitation of a shell cup placed within a plain cup.

A very good illustration of this class of vessel is given in Fig. 375. It is evidently intended to imitate a trimmed conch shell. The apex and a few of the surrounding nodes are shown at the right, while the base or spine forms a projecting lip at the left. A coil of clay forms the apex. This

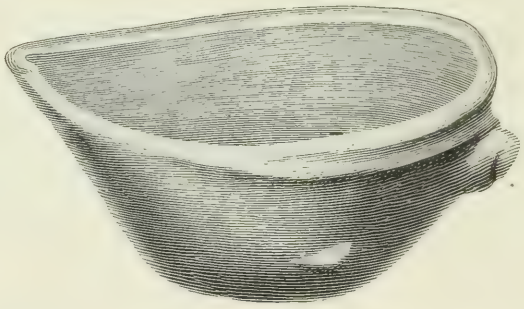


FIG. 375.—Bowl imitating a modified conch shell.—$\frac{1}{3}$.

is carried outward in a sinistral spiral to the noded shoulder. We have here a suggestion of the origin of a favorite decorative motive, the scroll, a clew, however, which the paucity of examples makes it difficult to follow up satisfactorily.

Although we may not be able to arrive at any definite conclusion in regard to the origin and significance of the practice of modeling life forms in clay, we are certain of one thing, that it became an important feature in the potter's art, and that in due course of time the practice broke loose from the restraints of birth and tradition and asserted its

freedom in the production of any form that superstition or fancy happened to select.

The artist probably did not follow nature with great accuracy in all the details of species and varieties, but some definite model must have been

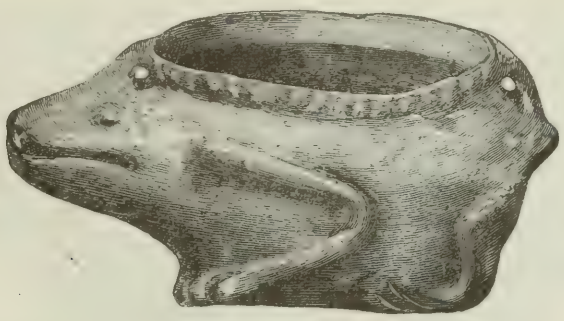


FIG. 376.—Frog-shaped bowl: Craigshead Point, Arkansas.—$\frac{1}{3}$

in view, in nearly all cases, and such characters as came to be regarded as essential to that creature were never lost sight of, consistency

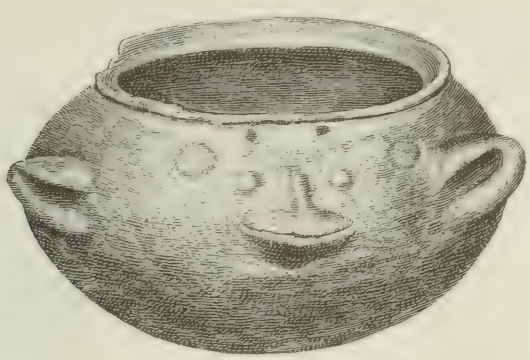


FIG. 377.—Frog-shaped bowl: Pecan Point, Arkansas.—$\frac{1}{3}$.

being a most notable characteristic of the art of a savage or barbaric people.

FIG. 378.—Animal-shaped bowl: Arkansas.—$\frac{1}{3}$.

The sun-fish was a favorite model, but its form was generally employed in vessels with upright necks. A number of examples occur

in the next section. Of reptilian forms the frog seems to have been the favorite.

Few examples occur, however, in the shallower vessels. In the bowl illustrated in Fig. 376, the various members of the body are boldly

FIG. 379.—Bird-shaped bowl: Arkansas.—$\frac{1}{3}$.

FIG. 380.—Bird-shaped bowl: Arkansas.—$\frac{1}{3}$.

modeled, and appear about the most expanded portion of the vessel. The rim is ornamented with a series of notches, and two small loops connect the rim with the head and tail of the creature. The legs are characteristic, and the long toes extend beneath the body. The bottom

of the vessel is flat. The make and finish are as usual, but the surface has been painted red. A similar vessel is shown in Fig. 377, the view being taken from the front. It is well polished and has a rounded bottom. The color is dark.

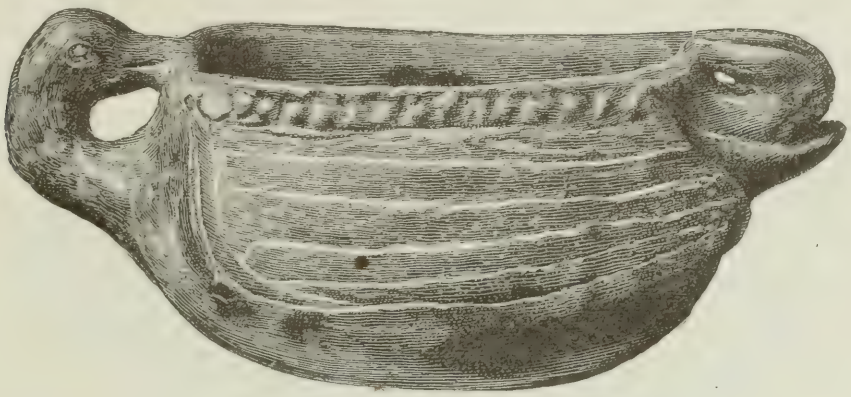


FIG. 381.—Bird-shaped bowl: Arkansas.—⅓.

Another remarkable example of this use of animal forms is seen in the vessel presented in Fig. 378. A deep globular bowl of dark, well-polished ware is made to represent the head of an animal. A long snout, with teeth and nostrils and accompanied by a pair of knobs

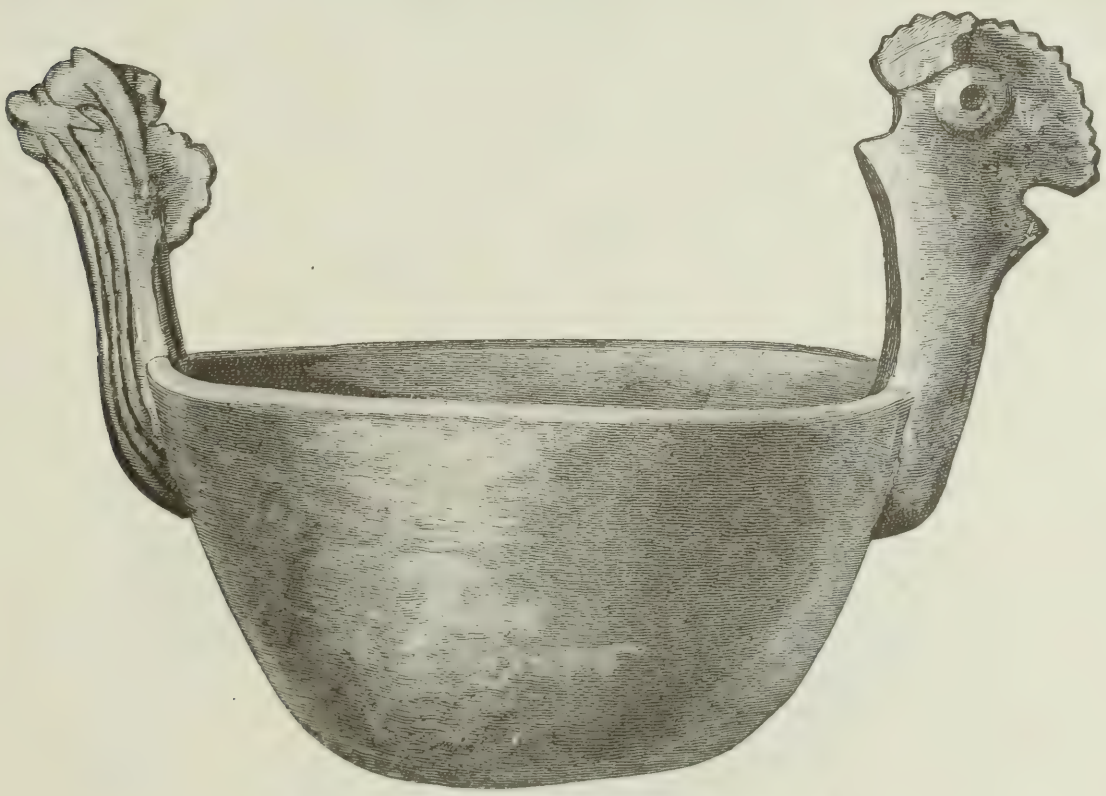


FIG. 382.—Bowl with grotesque heads: Arkansas.—⅓.

for eyes, embellishes the right side—as seen in the cut—ears appear at the front and back, and a circular node standing, perhaps, for the severed neck, is placed at the left. The head has a decidedly porcine look, yet it may have been intended for a raccoon or an opossum.

Fig. 379 illustrates a large shallow bowl or pan of ordinary form and finish. The head of a bird resembling a turkey is attached to one side, with the bill turned inward. On the opposite side there is a small handle-like projection that represents the bird's tail.

A vessel of somewhat extraordinary form is shown in Fig. 380. The bowl is smaller and deeper than the last, and serves as the body of a bird, the head and tail of which are of unusual proportions. The neck is very long and thick and is gracefully curved, but the head is not modeled with sufficient care to make apparent the species intended.

The vessel shown in Fig. 381 is also finished in imitation of a bird. In this case the bird is placed upon its back, the neck and head being looped up to form a sort of handle on one side, while the legs answer a like purpose on the opposite side. The wings are represented by a number of lines rudely engraved upon the sides of the vessel. The resemblance of this bowl to the wooden basins made by Northwest Coast Indians is very striking.

The vessel shown in Fig. 382 is one of the most unique yet brought to light. It is a heavy, rather rudely finished bowl, to the rim of which two grotesque heads, apparently of nondescript character, have been attached. One resembles the oft-occurring plumed serpent of aboriginal American art in a number of its characters. The other has a double comb somewhat resembling that of a domestic fowl. No description can convey as clear a conception of these monstrosities as the accompanying illustration.

FIG. 383.—Heads of birds.

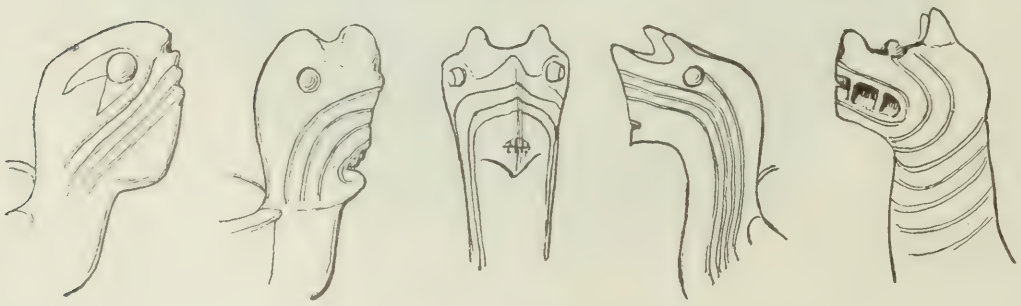


FIG. 384.—Grotesque heads.

A good degree of skill is shown in the modeling of varieties of birds. A fair idea of the accuracy of these potters in this direction will be conveyed by the series of heads shown in Fig. 383. Several species of

ducks are apparently differentiated, one of which, resembling the summer duck closely, is given in *a*, while the head given in *b*, although possibly also intended for a duck, is much like a grouse or partridge. The pigeon or dove is seen in *c*, the vulture or eagle in *d*, and the owl in *e*.

FIG. 385.—Bowl with grotesque head: Pecan Point, Arkansas.—$\frac{1}{3}$.

It would be difficult to imagine more grotesque and outlandish heads than those attached to the bowls illustrated in Figs. 385 and 386. The vessels themselves are of the usual type, rudely modeled and finished

FIG. 386.—Bowl with grotesque head: Pecan Point, Arkansas.—$\frac{1}{2}$.

and very heavy. The first is dark in color, the other red. The strange animal here represented is certainly not a close copy of anything in

nature. It is characterized by upright ears, a high bulbous snout and a grinning mouth. The teeth in some cases resemble the fangs of a serpent. The eyes consist of rounded nodes; and often curved lines,

FIG. 387.—Bowl with grotesque handle: Scanlon's Landing, Arkansas.—⅓.

incised or in relief, extend from them or the mouth down the sides of the neck. The tail at the opposite end of the vessel is turned upward

FIG. 388.—Animal-shaped bowl: Arkansas.—⅓.

and coiled. The type specimens of this form are from Pecan Point, Arkansas.

The peculiar character of this class of heads is well shown in the series given in Fig. 384. My observations have led me to suspect that they may be the result of attempts to model in clay the mythical plumed serpent which is so graphically delineated in the engraving upon the little vase shown in Fig. 407. The fact that in one case legs have been added to the base of the body militates against this theory. Their resemblance to the gargoyle heads of mediæval architecture suggests the possibility of early European influence.

If possible, a still more novel conceit is embodied in the handle of the vessel shown in Fig. 387. It can be likened to nothing in nature more readily than to the antler of an elk. This vessel is of a dark brownish color, and is but slightly polished. A duplicate specimen of inferior size and finish has recently been added to the National Museum from a grave at Pecan Point.

Similar to the preceding in general appearance are a number of bowls or deep pans, embellished with the heads of animals. A very good example is given in Fig. 388. The head has a decided resemblance to that of a female deer or fawn. The tail appears upon the opposite side of the basin, and is pendant, as in nature. Legs have been added to the base of the bowl; these terminate beneath the body in cloven hoofs.

The small bowl, shown in Fig. 389, is nearly hemispherical in shape.

FIG. 389.—Animal-shaped bowl: Arkansas.—$\frac{1}{3}$.

A small head, representing some animal, has been attached to the rim. The exterior surface is covered with a number of groups of roughly-worked concentric ridges, which may be meant to imitate hair. These ridges have apparently been made by pinching up the clay between the nails of the fingers and thumb. Figures of similar form are generally incised. This vessel is probably from the vicinity of Pecan Point.

The creature represented by the head, shown in Fig. 390, would not be recognized from the cut, or perhaps not even with certainty from any single specimen, but with a number of examples in view, there need be no hesitation. The animal intended is a bat. In a number of features the likeness is striking. The high top head, the angular ears, and the small eyes crowded down upon the mouth are characteristic.

The tail is flat, curved a little upward, and ridged along the middle in imitation of the attenuated caudal column. The general consistency of this work is demonstrated by the fact that this particular form of tail accompanies this form of head in all cases, and is not associated

FIG. 390.—Bowl with bat's head: Pecan Point, Arkansas.—$\frac{1}{3}$.

with any other. The face of the bat is always turned toward the vessel; in imitation of other varieties of animals, it is nearly always turned out.

In one case, Fig. 391, we have, what appears to be, a human head attached to the side of the bowl. This head is furnished with a tri-

FIG. 391.—Bowl: Arkansas.—$\frac{1}{3}$.

angular crest, notched on the edges, and enlarged at the top. The case is a perplexing one, especially as a tail like that attached to the bird bowls occurs on the side opposite the head.

POT-SHAPED VESSELS.

There is no hard line of demarkation between the class of vessels now to be considered and those already described. The distinction is made chiefly for convenience of treatment.

MATERIAL, ETC.—As a rule, pot-shaped vessels are of coarser materials and of ruder finish than other forms, indicating, perhaps, their exclusive relegation to the culinary arts, where nice finish was not essential. In many cases they show use over fire.

In size, they have a wide range. The larger are often as much as fifteen inches in diameter, and twenty in height. There are a score or more of very large size in the Davenport museum.

FORM.—The form characteristics are a full globular body—sometimes elongated, sometimes compressed vertically—a low neck, and a wide aperture. The bottom is very generally rounded. A few of the form modifications are shown in Fig. 392. The rim or neck is always short,

FIG. 392.—Forms of pots.

and is upright or slightly recurved. Many vessels resembling the shapes here presented are placed with the succeeding group, as they appear to be functionally distinct from this. There are no examples with legs or stands.

HANDLES.—Looped handles are confined almost wholly to this class of vessels. They are generally ranged about the rim or neck. In a majority of cases there are four handles to a vessel. We rarely find less than that number, but often more. It is a usual thing to see fifteen or twenty handles set about the rim. Originally the handles may have been exclusively functional in character; they were so at least in antecedent forms. These potters have certainly, at times, employed them for purposes of embellishment. In some cases they are too fragile for use, in others they are flattened out against the neck of the vessel and united with it throughout their whole length. Again, they have degenerated into mere ridges, notched and otherwise modified to suit the fancy. In many instances their place is taken by incised lines or indentations which form effective and appropriate ornamental figures. A series of vessels showing gradations from perfect handles to their atrophied representatives is shown in Fig. 393.

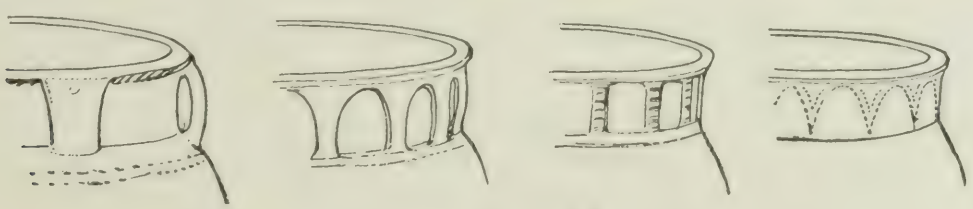


FIG. 393.—Handles.

ORIGIN OF HANDLES.—Handles were doubtless originally attached to facilitate the suspension and handling of vessels and other articles. They probably had their typical development in basketry, and there

are good reasons for supposing that certain forms of the handles upon pottery owe their existence to contact with the sister art. This idea is confirmed by their shapes, and by the fact that a large percentage of the pottery handles are useless as aids to suspension or transportation.

ORNAMENT.—Rim margins are modified for decorative purposes, very much as they are in bowls. See Fig. 363.

The bodies of these vessels are often elaborately ornamented, mostly by incised figures, but often by punctures, nodes and ribs. The incised lines are arranged principally in groups of straight lines forming angular figures—a very archaic style—and in groups of festooned lines so placed as to resemble scales. The punctures are made with a sharp point, and form encircling lines and various carelessly executed patterns. A rude sort of ornamentation is produced by pinching up the soft clay of the surface between the nails of the fingers and thumb. Relief ornament consists chiefly of applied fillets of clay, arranged to form vertical ribs. Rows of nodes are sometimes seen, and in a few cases the whole body is covered with rude nodes.

ILLUSTRATIONS.—The specimens selected for illustration are intended to epitomize the forms and decorations of a very great number of vessels, and are not always the most showy examples to be found.

A vessel of rather exceptional shape is given in Fig. 394. It could as well be classed with bowls as with pots. The ware is of the rude

FIG. 394.—Pot: Arkansas (?).—$\frac{1}{3}$.

kind generally used over the fire. The body is high and cylindrical, the rim flaring, and the bottom quite flat. The form is suggestive of our domestic crockery.

Another bowl-like pot is illustrated in Fig. 395. It is of the dark, rudely hand-polished variety. The body is globular, the neck is very short and is ornamented with a dentate band. Below this are two pairs of perforations, probably used for suspending the vessel. There are a number of vessels of this variety, mostly smaller than the example given.

The vessel shown in Fig. 396 is still more pot-like. The neck is higher than the preceding and is slightly constricted. It is of very rude construction and finish. The rim is furnished with two small horizontal

FIG. 395.—Pot: Arkansas (?).—⅓.

FIG. 396.—Pot: Waverly, Tennessee.—⅓.

projections, and the body is somewhat obscurely lobed. It represents a very numerous class, especially plentiful in Southeast Missouri.

The little pot presented in Fig. 397 has the body covered with rude nodes. The neck is surrounded by a heavy fillet, notched obliquely in imitation of a twisted cord. Four rude handles have also been attached.

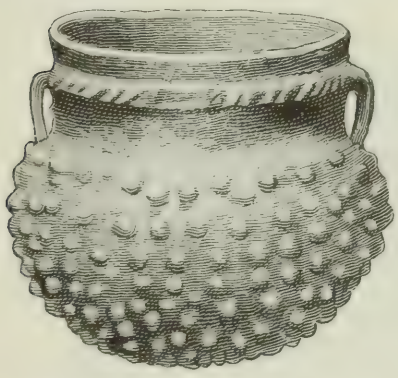


FIG. 397.—Pot: Arkansas (?).—⅓.

FIG. 398.—Pot: Arkansas.—⅓.

In Fig. 398 we have one of the rudest examples in the collection. The neck is furnished with four handles, which alternate with four vertical ribs. The body is misshapen and rough, and is ornamented with a series of nearly vertical ridges, a rather usual device, and one which is sometimes very neatly executed.

The body of the nicely finished pot shown in Fig. 399 is embellished with short, incised markings, arranged in vertical lines. The neck is furnished with a heavy indented band and four strong handles. The locality given is "Four-Mile Bayou, Alabama."

The specimen given in Fig. 400 illustrates the use of great numbers of handles. In this case there are sixteen. They are gracefully formed and add much to the appearance of the vessel, which is really a bowl with wide, flaring rim. In most of its characters it resembles the pots.

Another curious variation in the shape of handles is shown in the little cup given in Fig. 401. This can hardly be called a usual feature, although occurring in vessels of various localities. I have seen an ex-

FIG. 399.—Pot: Alabama (?).—⅓.

FIG. 400.—Pot: Arkansas (?).—⅓.

ample from the Missouri Valley in which a great number of perforated handles were set about the rim, and another in which there was a continuous, partially free, collar perforated at intervals. There is a specimen of this class in the Davenport Academy collection in which the flattened handles are so placed about the neck as to form a series of

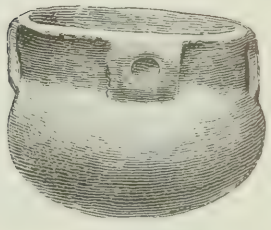


FIG. 401.—Pot: Arkansas (?).—⅓.

FIG. 402.—Pot: Arkansas (?).—⅓.

arches. These, I take it, are partially atrophied forms. The body is ornamented by a scale-like pattern of incised lines—a favorite method of decoration with the ancient potter.

In Fig. 402 we have an illustration of total atrophy. The handles are represented by simple incised lines. There is no relief whatever. In many cases the form of the handles is shown in low relief, the outer surface being plain or ornamented with incised lines or punctures. The body of the vessel last mentioned is covered with rudely incised scroll designs.

Another good illustration of this class of vessels is shown in Fig. 403.

The cut is taken from my paper in the Third Annual Report of the Bureau of Ethnology. The handles are indicated by incised lines. The body was ornamented by pinching up the clay between the nails of the thumb and forefinger. Locality: Pecan Point, Arkansas.

A good example of the larger pots is illustrated in Fig. 404. It is engraved a little less than one-fourth the dimensions of the original.

FIG. 403.—Pot: Pecan Point, Arkansas.—$\frac{1}{3}$.
[*National Museum*]

FIG. 404.—Pot: Hale's Point, Tennessee.—$\frac{1}{4}$.

The height is seventeen inches and the greatest diameter eighteen inches. It is very well made. The walls are even and only moderately thick.

The dark, unpolished surface is profusely speckled with fragments of white shell. There are four wide, strong handles. The rim and neck are ornamented with encircling lines of finger-nail indentations.

A masterpiece of this class of work is shown in Fig. 405. It was ob-

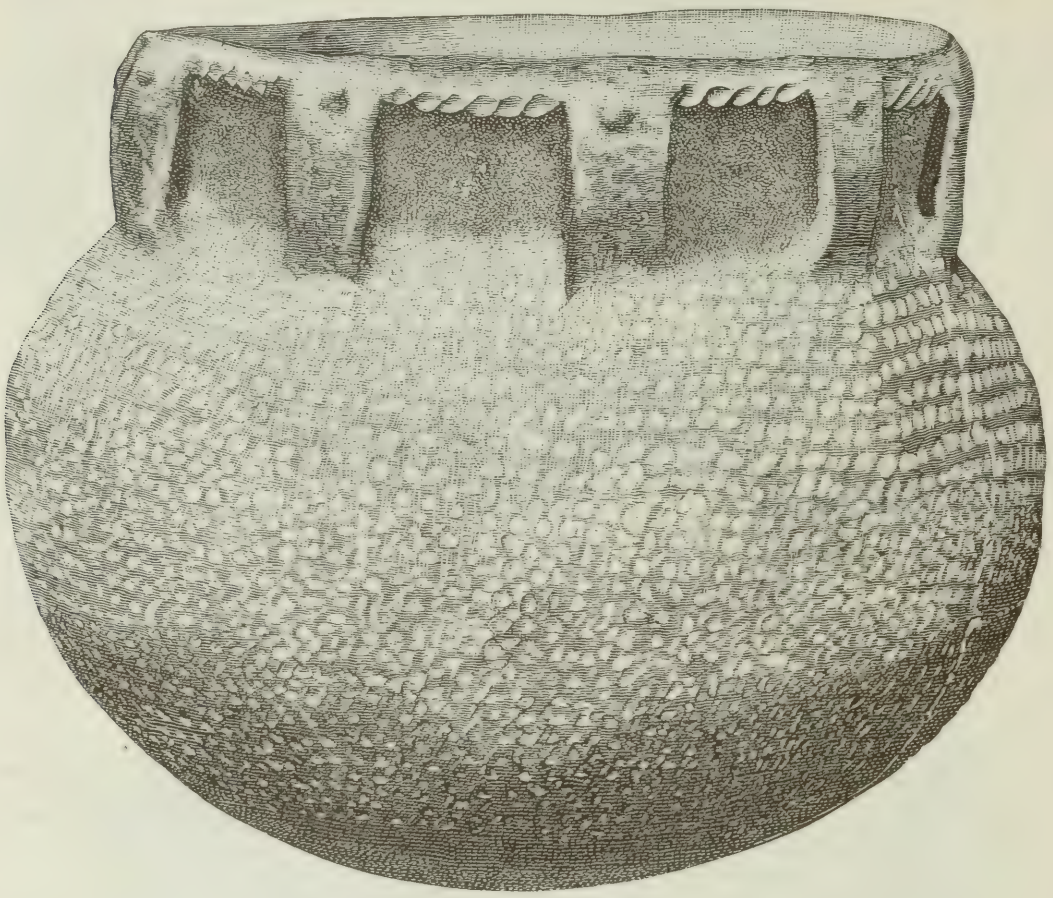


FIG. 405.—Pot: Pecan Point, Arkansas.—$\frac{1}{3}$.

tained at Pecan Point. It is not quite symmetrical in form but is carefully finished. The color is gray, with mottlings of dark spots, the result of firing. The height is eleven inches, and the aperture is ten inches in diameter. There are ten strong, well-proportioned handles, each having a knob resembling a rivet head, near the upper end. The margin of the rim has a circle of indentations. There are a few red vessels of this shape which have figures of reptiles attached to the neck.

WIDE-MOUTHED BOTTLES OR JARS.

Vessels of this class were probably not devoted to the ordinary uses of cooking and serving food. They are handsome in shape, tasteful in decoration, and generally of small dimensions. They are found, as are all other forms, buried with the dead, placed by the head or feet, or within reach of the hands. Their appearance is not suggestive of their original office, as there is no indication of wear, or of use over fire.

FORM.—I include under this head a series of forms reaching from

the wide-mouthed pot to the well-developed bottle. They really correspond closely to the high-necked bottles in all respects save in height of neck, and the separation is therefore for convenience of treatment only. The following illustration (Fig. 406) will give a good idea of the forms included.

FIG. 406.—Forms of jar-shaped bottles.

There are also many eccentric and many extremely interesting life forms included in this group. A number of vases, modeled after the human head, are, by their general outline, properly included.

ORNAMENTATION.—The rims, bodies, and bases are embellished much after the fashion of the vessels already described, with the exception that handles or handle-like appendages or ornaments seldom appear. The painted designs are in one, two, or three colors, and the incised figures have been executed both in the soft and in the thoroughly dried clay.

The style of execution is often of a very high order, especially in some of the more southerly examples, a number of which are from the mounds of Mississippi and Louisiana. We note the fact that in a few of the designs there is a slight suggestion of Mexican forms.

In illustrating this group, I am compelled, for the want of space to omit many interesting examples. I present only such as seem to me especially instructive.

ILLUSTRATIONS.—*Ordinary forms.*—The vessel shown in Fig. 407 may be taken as a type of a very large class. It is most readily described as a short-necked, wide-mouthed bottle. It is symmetrical in shape

FIG. 407.—Bottle: Pecan Point, Arkansas.—$\frac{1}{3}$.

and very nicely finished. The lip is supplied with a narrow, horizontal rim. The body expands somewhat abruptly from the base of the up-

right neck to the squarish shoulder, and contracts below in an even curve, giving a hemispherical base. There are a multitude of variations from this outline, a few of which are suggested in Fig. 406. These vessels are nearly all of the dark, grayish-brown, fire-mottled ware. A few are yellowish, and such are often painted red or decorated with designs in red and white

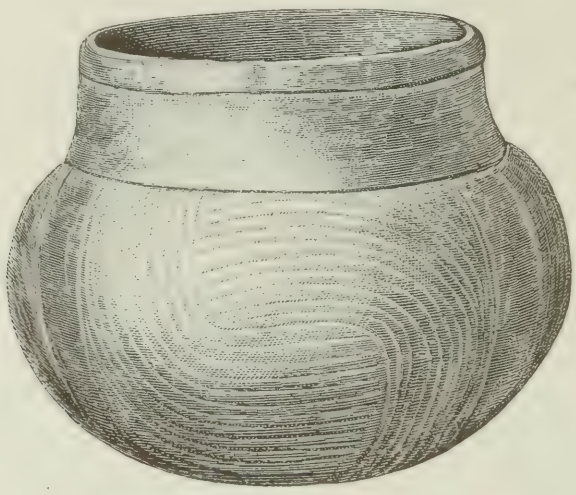


FIG. 408.—Bottle: Arkansas.—⅓.

Two charming vases are shown in Figs. 408 and 409. The surface finish is in both cases very superior. The lines of the figures are carefully drawn, and seem to have been produced by the trailing, under even pressure, of a smooth rather blunt point. It is difficult to get so nicely finished and even a line by simple incision, or by excavating the clay. The design in Fig. 408 consists of eight groups of curved lines

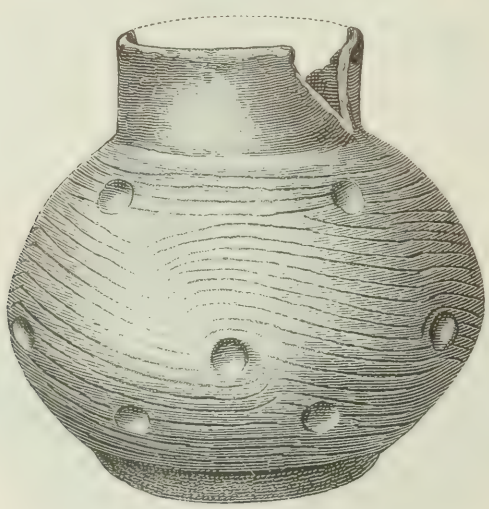


FIG. 409.—Bottle: Arkansas.—⅓.

arranged in pairs, which are separated by plain vertical bands. It might be considered an interrupted or imperfectly connected form of the running scroll. This grouping of lines is frequently met with in the decorative designs of the Southern States. The design upon the other vase, Fig. 409, is still more characteristic of the South. It consists of an encircling row of round, shallow indentations, about which series

of incised scrolls are linked, and of two additional rows of depressions, one above and the other below, through which parallel lines are drawn.

Many other interesting illustrations of the simpler forms could be given, but nearly all are very similar in their more important features to the examples that precede or follow.

As skilled as these peoples were in modeling life forms, and in engraving geometric devices, they seem rarely to have attempted the linear representation of life forms. We have, however, two very good examples.

FIG. 410.—Engraved bottle: Arkansas.

The first of these is shown in outline in Fig. 410. It is a large bottle embellished with four rude drawings of the human figure, executed with a sharp point in the soft clay. Height of vessel, eight inches.

The work is characteristic of a very early stage of art. The figures could be duplicated in the work of the ancient Pueblos, and in the picto-

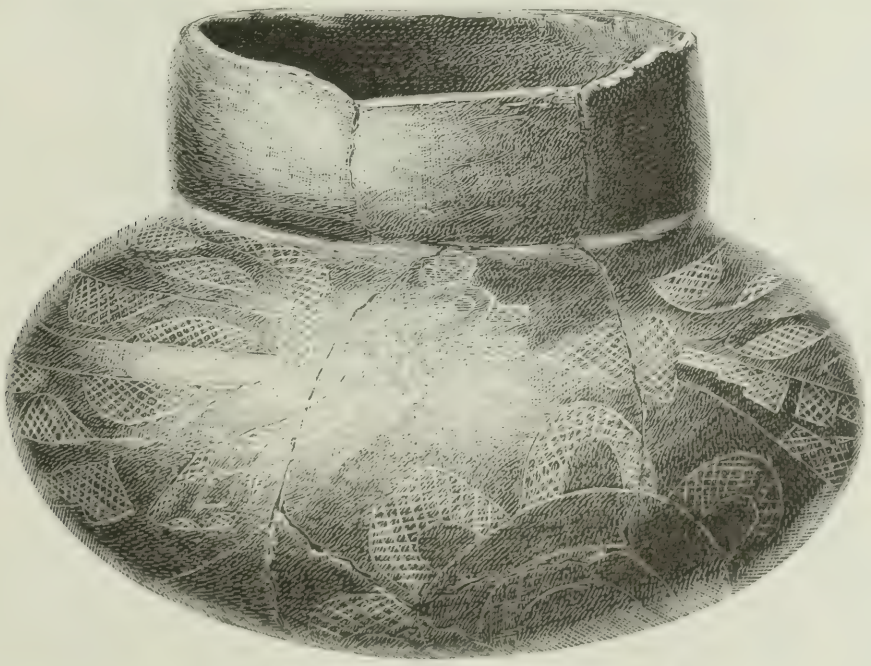


FIG. 411—Engraved bottle: Arkansas.—¾.

graphic art of many of our savage tribes. They are probably derived from symbolic art, and possibly relate to the guardians of the four points of the compass, or to some similar mythical characters.

The work upon the neat little bottle, presented in Fig. 411, is of the

same class as the above but of a much higher grade, both in execution and conception. The engraved design is one of the most remarkable ever obtained from the mounds. It consists of two winged and crested rattlesnakes, which encircle the most expanded part of the vessel, and of two sunflower-like figures, alternating with them. These designs are very carefully engraved with a needle-like point, and are adjusted to the form of the vase in a way that suggests forethought and an appreciation of the decorative value of the figures. By dint of rubbings, photographs and sketches, I have obtained the complete drawing of the various figures which are given in Fig. 412 on a scale of one-half the original.

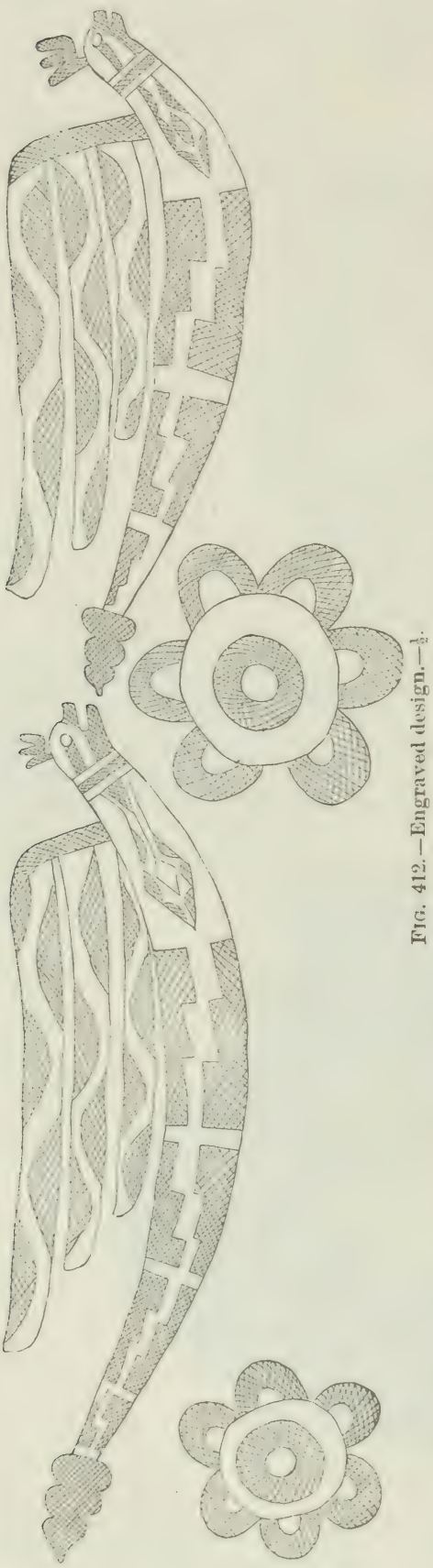


Fig. 412.—Engraved design.—½.

The serpent, especially the rattlesnake, has always taken a leading place in the mythology and the art of the more cultured American races, and crest-plumes, and wings have often been considered its proper attributes. The conventional method of representation is also characteristically aboriginal. The plumes, the figure connected with the eye, the bands upon the neck, the stepped figures of the body, and the semi-circular patches on the wings are all characters that appear again and again in the ancient art of the United States. The peculiar emblematic treatment of the heart is almost universal in temperate North America. And just here I may be permitted to suggest that the remarkable feature of the great earth-work serpent of Adams county, Ohio, which has been regarded as the "symbolic egg," and which in its latest phase has become the issue of a frog and the prey of the serpent, is possibly intended for the heart of the serpent, the so-called frog being the head. The rosette figures are not often duplicated in Indian art. There can be little doubt that the figures of this design are derived from mythology.

Eccentric forms.—A form of vessel of which civilized men make peculiar use is depicted in Fig. 413. There is a marked resemblance to a common tea-pot. A very few examples have been found, two of which are illustrated in the Third Annual Report of the Bureau of Ethnology. The specimen here given is well made and carefully finished.

FIG. 413.—Teapot-shaped vessel: Arkansas.—$\frac{1}{3}$.

The neck is low and wide, and the body is a compressed sphere. The spout is placed upon one side and a low knob upon the other. The absence of a handle for grasping indicates that the vessel was probably not intended for boiling water. These characters are uniform in all the specimens that have come to my notice. Two small circular depres-

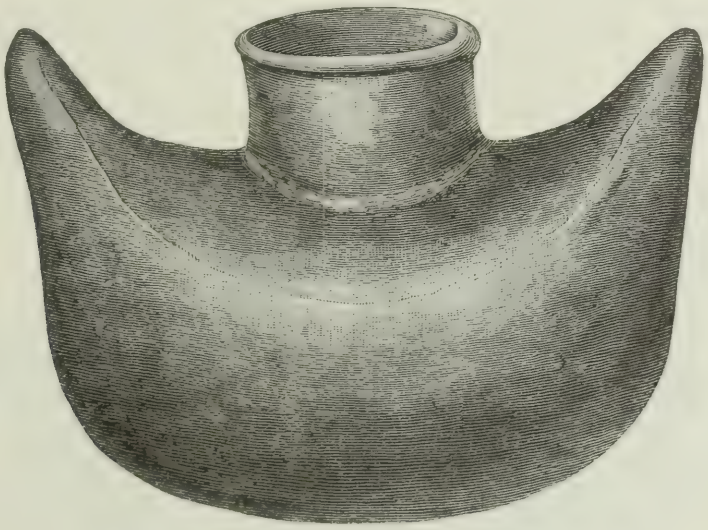


FIG. 414.—Vessel of eccentric form: Arkansas.—$\frac{1}{3}$.

sions occur on the sides of the vessel alternating with the spout and the knob and with these features form centers for four rosettes of involute incised lines. The origin of this form of vessel is suggested by a fine red piece from "Mississippi," now in the national collection. The knob is the head of a turtle or other full-bodied reptile, and the spout takes the place of the creature's tail. Many of the animal-shaped vases would resemble this form closely if an opening were made through the top of the body and through the tail.

In connection with the teapot-like vessels it will be well to describe another novel form not wholly unlike them in appearance, an example

being shown in Fig. 414. The shoulder is elongated on opposite sides into two curved, horn-like cones, which give to the body a somewhat crescent-shaped outline. It is of the ordinary plain, dark ware, and has had a low stand or base which is now broken away.

The specimen given in Fig. 415 has been considerably mutilated, but evidently belongs to the same class as the preceding. It probably also

FIG. 415.—Vessel of eccentric form: Pecan Point, Arkansas.—$\frac{1}{3}$.

resembled the vessel which follows; it serves at least as a link between the two. The body is ornamented with carelessly drawn, deeply incised, involute designs.

Life forms.—A further elaboration of the preceding forms is illustrated in Fig. 416. On one side the conical projection is greatly elongated and fashioned to resemble the head of some grotesque beast, with horns,

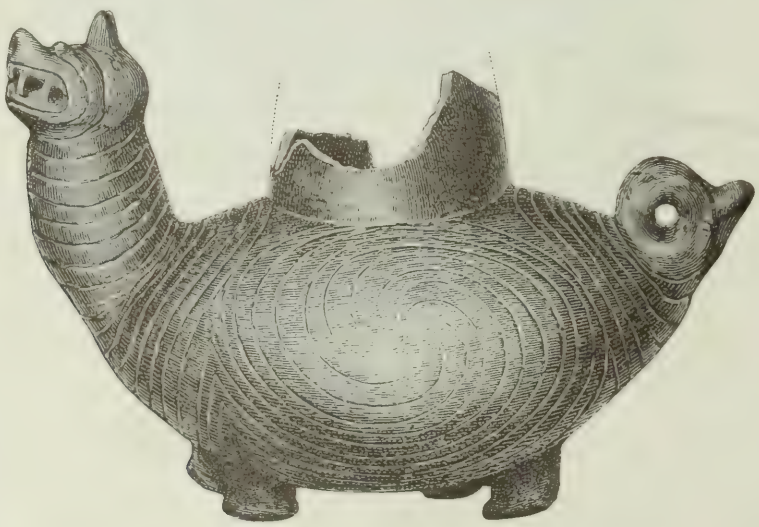


FIG. 416.—Animal-shaped vase: Pecan Point, Arkansas.—$\frac{1}{3}$.

expanded nostrils, and grinning mouth. The opposite point is elongated and looped, forming a tail, while the base of the body is furnished with four feet. On the sides of the vessel are engraved figures, consisting of clusters of involute lines, as in the specimen just given. It is of the ordinary dark pottery, and was obtained at Pecan Point.

Equally noteworthy as plastic representations are the two examples that follow. The vessel shown in Fig. 417 is modeled in imitation of a sunfish. The body is much flattened and is neatly polished. The head is well modeled, as are also the fins and tail. Many examples of this form are found, some of which are elaborately treated, the scales being minutely shown. The body of the fish is sometimes placed in the nat-

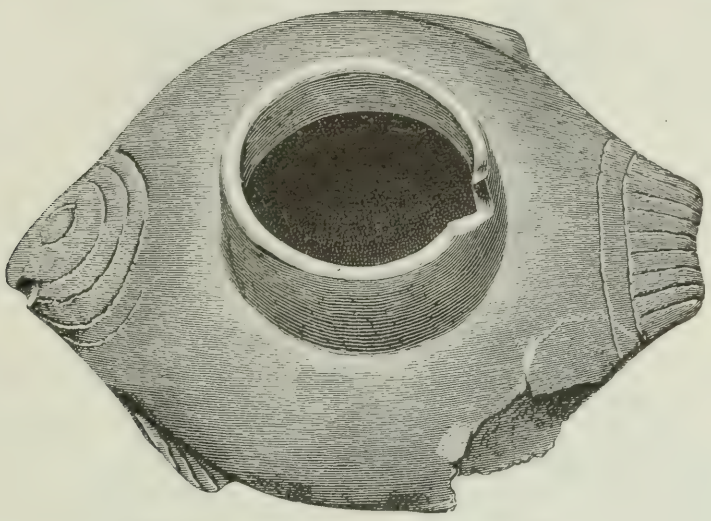


FIG. 417.—Sunfish vase: Arkansas.—$\frac{1}{3}$.

ural upright position, the neck of the vessel rising from the back, producing a lenticular shape.

The animal so carefully modeled in the vessel given in Fig. 418 resembles a raccoon or an opossum. The mouth of the vessel is wide and the neck upright and short. The body is ornamented with a pattern

FIG. 418.—Opossum vase: Arkansas.—$\frac{1}{3}$.

made up of triangular groups of incised lines, which may or may not be meant for hair.

The love of modeling life forms shows itself again in the little vase illustrated in Fig. 419. The head of some animal, rudely suggested, projects from one side, while a curved tail on the other carries out the

idea of the complete creature. The round body is decorated with broad vertical lines in dark red. A red line encircles the rim.

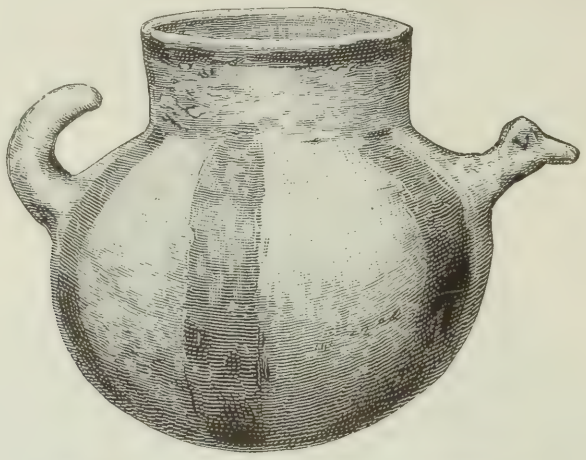


FIG. 419.—Animal-shaped vase: Arkansas.—$\frac{1}{3}$.

It is not strange that a people who had successfully engaged in the modeling of life forms, and especially the heads of animals, should attempt the human head. Their remarkable success in this direction is shown in a number of vases, one of which is given in Fig. 420. This and kindred peoples had made considerable progress in carving in stone and other materials, evincing a decided talent for sculpture; but clay is so much more readily manipulated than either wood, stone, or shell, that we are not surprised to find their best work in that material.

It is an interesting fact that with all this cleverness in the handling of clay, and in the delineation of varied models, the art had not freed itself from the parent stem—the vessel—and launched out into an independent field. In a few cases such an end seems to have been achieved by certain groups of mound builders, notably those whose works at Madisonville, Ohio, have recently been explored by Professor Putnam. Modeling in clay was probably confined to vessels for the reason that, through their humble agency, the art was developed.

Up to the present time I have met with but eight of these curious head-shaped vases. All were obtained from the vicinity of Pecan Point, Arkansas, and, like other vessels, have been associated with human remains in graves or mounds. It is true that in all cases the bones of the dead have not been found, but this only indicates their complete decay. The question as to whether or not these vases were made exclusively for sepulchral purposes must remain unanswered; there is no source of information upon the subject. Such a purpose is, however, suggested in this case by the semblance of death given to the faces.

The finest example yet found is shown in Fig. 420. In form it is a simple head, five inches in height and five inches wide from ear to ear. The aperture of the vase is in the crown, and is surrounded by a low, upright rim, slightly recurved. The cavity is roughly finished, and follows pretty closely the contour of the exterior surface, excepting in projecting features such as the ears, lips, and nose. The walls are generally

from one-eighth to one-fourth of an inch in thickness, the base being about three-eighths. The bottom is flat, and takes the level of the chin and jaws.

The material does not differ from that of the other vessels of the same locality. There is a large percentage of shell, some particles of which are quite large. The paste is yellowish gray in color and rather coarse in texture. The vase was modeled in the plain clay and permitted to harden before the devices were engraved. After this a thick film of fine yellowish-gray clay was applied to the face, partially filling up the engraved lines. The remainder of the surface, including the lips, received a thick coat of dark red paint. The whole surface was then highly polished.

The illustration will convey a more vivid conception of this striking head than any description that can be given. The face cannot be said

FIG. 420.—Head-shaped vase: Pecan Point, Arkansas.—½.

to have a single feature strongly characteristic of Indian physiognomy. We have instead the round forehead and the projecting mouth of the African. The nose, however, is small and the nostrils are narrow. The face would seem to be that of a youngish person, perhaps a female. The features are all well modeled, and are so decidedly individual in character that the artist must have had in his mind a pretty definite conception of the face to be produced as well as of the expression ap-

propriate to it, before beginning his work. It will be impossible, however, to prove that the portrait of a particular personage was intended. The closed eyes, the rather sunken nose, and the parted lips were certainly intended to give the effect of death. The ears are large, correctly placed, and well modeled ; they are perforated all along the margin, thus revealing a practice of the people to whom they referred. The septum of the nose appears to have been pierced, and the horizontal depression across the upper lip may indicate the former presence of a suspended ornament.

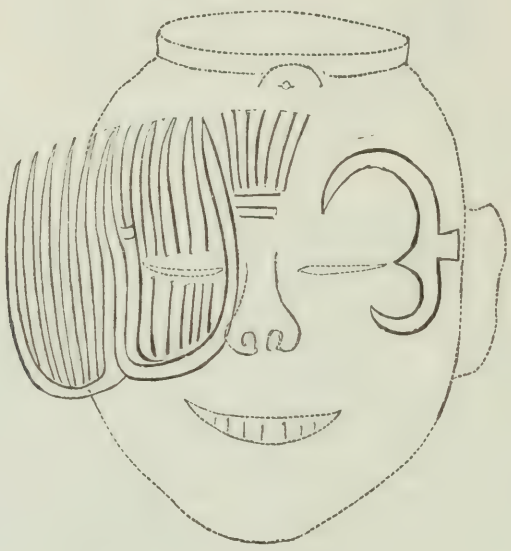


FIG. 421.—The engraved figures.

Perhaps the most unique and striking feature is the pattern of incised lines that covers the greater part of the face. The lines are deeply engraved and somewhat "scratchy," and were apparently executed in the hardened clay before the slip was applied. The left side of the face is plain, with the exception of a figure somewhat resem-

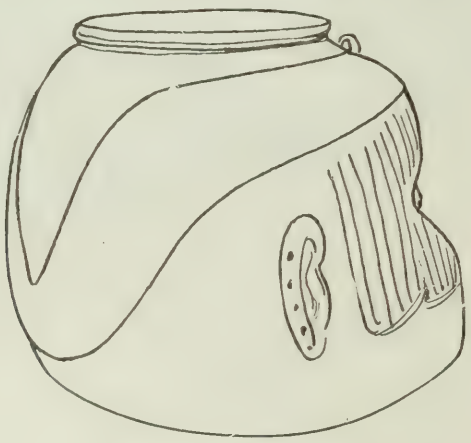


FIG. 422.—Head covering.

bling a grappling hook in outline which partially surrounds the eye. The right side is covered with a comb-like pattern, placed vertically, with the teeth upwards. The middle of the forehead has a series of

vertical lines and a few short horizontal ones just above the root of the nose. There are also three curved lines near the corner of the mouth not shown in the cut.

The diagram presented herewith (Fig. 421) gives in dotted lines the correct outline of the front face, and shows projected in solid lines the engraved figures. The significance of these markings can only be surmised in the most general way. Their function is probably the same as that of the tattooed and painted figures upon the faces of living races.

It will be well to observe that upon the forehead, at the top, there is a small perforated knob or loop. Similar appendages may be seen upon many of the clay human heads from this valley. A Mexican terra-cotta head now in the museum at Mexico has a like feature, and, at the same time, has closed eyes and an open mouth.

The head dress should be noticed. It seems to have been modeled after a cloth or skin cap. It extends over the forehead, falls back over the back of the head, and terminates in points behind, as seen in Fig. 422. Two layers of the material are represented, the one broad, the other narrow and pointed, both being raised a little above the surface upon which they rest. This vase head is somewhat smaller than the average human head.

FIG. 423.—Head-shaped vase: Pecan Point, Arkansas.—$\frac{1}{2}$.
[*National Museum.*]

Another of a very similar character now in the Davenport Museum is about one-half the size of this. The face is much mutilated.

A third is somewhat larger than the one illustrated, but is nearly the

same in finish and color. The face also has the semblance of death, but the features are different, possessing very decided Indian characteristics. There is no tattooing.

All of these heads, including also some of those in the National Museum, are much alike in conception and execution.

This fact will be forcibly impressed upon the mind by a study of Fig. 423, which represents a specimen recently exhumed at Pecan Point by agents of the Bureau of Ethnology. In size, form, color, finish, modeling of features, and expression, this head closely resembles the one first described. The work is not quite so carefully executed and the head has probably not such pronounced individuality. The curious device that in the other example appeared near the left eye here occurs on both sides. The lower part of the face is elaborately engraved. Three lines cross the upper lip and cheeks, reaching to the ear; a band of fret-like devices extends across the mouth to the base of the ears, and another band filled in with oblique reticulated lines passes around the chin and along the jaws. The ears are perforated as in the other case and the septum of the nose is partially broken away as if it had once held a ring. A perforated knob has occupied the top of the forehead as in the other case. The face is coated with a light yellowish gray slip, and the remainder of the surface is red.

FIG. 424.—Head-shaped vase: Arkansas.—$\frac{1}{3}$.
[*Thibault Collection.*]

Fig. 424 illustrates a very interesting specimen of the red pottery of Arkansas. It belongs to the collection of Mr. Thibault, of Little Rock, and was obtained from a mound in the vicinity of that city. The body is slightly lenticular and the human face, which is modeled upon one

side, interferes but little with the outline. The face is slightly relieved and extends from the neck of the vase to the widest part of the body, and laterally occupies about one-third of the circumference. The middle portion of the face is finished with a light flesh-colored slip, the remainder of the surface of the vessel being painted a bright rich red. Like the preceding example, the countenance is made to give the appearance of death or sleep. Other face-vessels of scarcely less interest are found in the Thibault collection.

HIGH-NECKED BOTTLES.

High-necked, full-bodied bottles form a decided feature in the pottery of this province. Similar vessels are rarely found in other sections of the United States, but occur in Mexico and South America. The forms are nowhere else so pronounced. They suggest the well-known water bottles of eastern countries.

In material, finish, and decorative treatment they do not differ greatly from the vases described in the preceding section.

FORM.—Their forms are greatly and often happily varied as will be seen from the series of outlines given in Fig. 425.

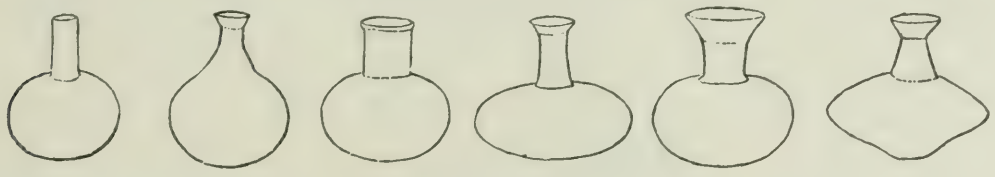


FIG. 425.—Scale of forms.

A striking feature is found in the presence of legs and stands. The former exhibit globular, conical, cylindrical, and terraced forms, Fig. 426. No example has any striking resemblance to European forms.

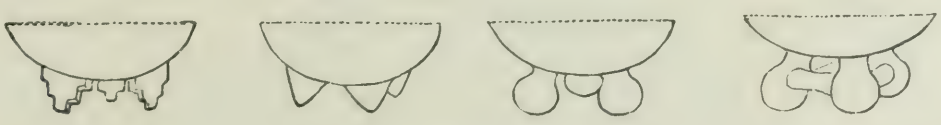


FIG. 426.—Tripods.

All are tripods, and are attached to ordinary forms of vessels in a way to suggest that they are superadded features probably rather recently acquired; at the same time legs were doubtless employed by the pre-columbian peoples. This is known to be true of Mexico, and Central and South America. There is no reason why the mound-builders of the Mississippi should not have discovered the use of such a device, readily suggested by the use of supports in building, in baking, or in using the vessels, and it would necessarily follow the modeling of life forms. It is true that quadrupeds would not directly suggest the tripod, but birds

modeled in clay were made to rest upon the feet and tail, thus giving three supports; besides it would readily be discovered that more than three supports are unnecessary.

The stands attached to these bottles are not essentially different from those described in the preceding section. They take the form of simple bands, as seen at *a*, Fig. 427; double bands, as shown in *b* and *c*; or perforated feet, as seen in *d*.

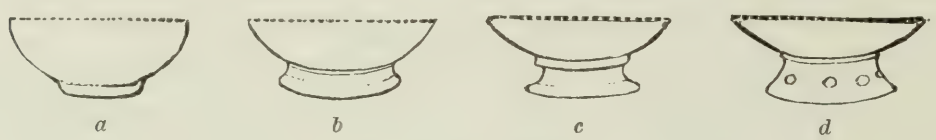


FIG. 427.—Stands.

Compound vessels are rather rare, nearly all of the varieties being outlined in Fig. 428. Some of these are formed by uniting two or even three simple forms in one. Others are only partially compound and re-

FIG. 428.—Compound forms.

semble the askoidal shapes of Greek art. Attention will be called to the probable origin of all these shapes elsewhere.

Life forms are found in all the groups of ware, but differ in the manner in which they are employed. Fig. 429 shows the usual methods of

FIG. 429.—Adaptation of the human form.

adapting the human form to high-necked bottles. Quadrupeds, fishes, and birds are treated in somewhat similar ways. The vessels represented in this and the four preceding illustrations belong to the various museums of the country.

ORNAMENT.—The styles of decoration are not distinct from those of other classes of vessels. The incised scroll patterns are sometimes very elaborate, and the designs in color are perhaps executed with greater care than in other groups.

ILLUSTRATIONS.—*Ordinary forms.*—I have not thought it advisable to figure many specimens of plain bottles, as all the varieties of outline

FIG. 330.—Bottle: Tennessee.—$\frac{1}{3}$.

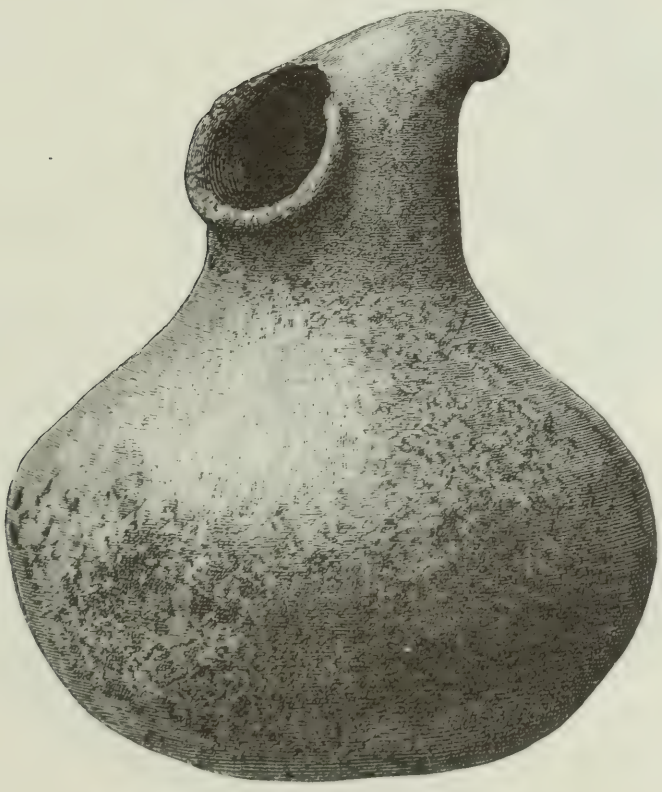


FIG. 431.—Gourd-shaped vessel: Arkansas.—$\frac{1}{5}$.
[*National Museum.*]

are repeated in the more highly elaborated or embellished pieces. Fig. 430 represents a plain bottle of the ordinary dark porous ware. The

neck is narrow above and expands abruptly below. The body is globular. Looking at this vessel with reference to a possible origin, we observe its resemblance to a common form of gourd. By a review of the collection, we find that there are many similar vessels actually modeled in imitation of gourds. Good examples are given in the Third Annual

FIG. 432.—Bottle: Arkansas.—$\frac{1}{3}$.

Report of the Bureau of Ethnology, from which Fig. 431 is taken, and in a paper by Edward Evers in Contributions to the Archæology of

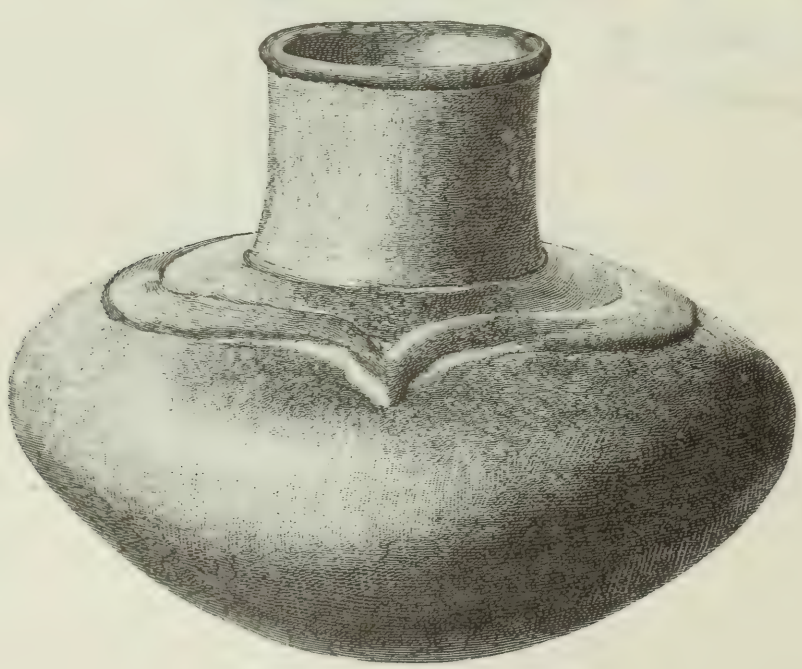


FIG. 433.—Bottle: Arkansas.—$\frac{1}{3}$.

[*National Museum.*]

Missouri. The markings of the original are often shown with a great deal of truthfulness in the earthenware reproductions.

Quite distinct in outline from the preceding forms is the bottle shown in Fig. 432. The neck is high and cylindrical and the body resembles a slightly-flattened globe. Set about the shoulder are four medallion-like faces, the features of which are modeled roughly in low relief. The ware is of the ordinary dark, slightly polished variety.

We have in Fig. 433 a good example of bottle-shaped vessels, the neck of which is wide and short, and the body much compressed vertically. There are a number of duplicates of it in the Museum. The specimen illustrated is in the national collection, and was obtained in Arkansas. It is a handsome vase, symmetrical in form, quite dark in color, and highly polished. The upper surface of the body is ornamented with a collar formed of a broad fillet of clay, or rather of two fillets, the pointed ends of which unite on opposite sides of the vase.

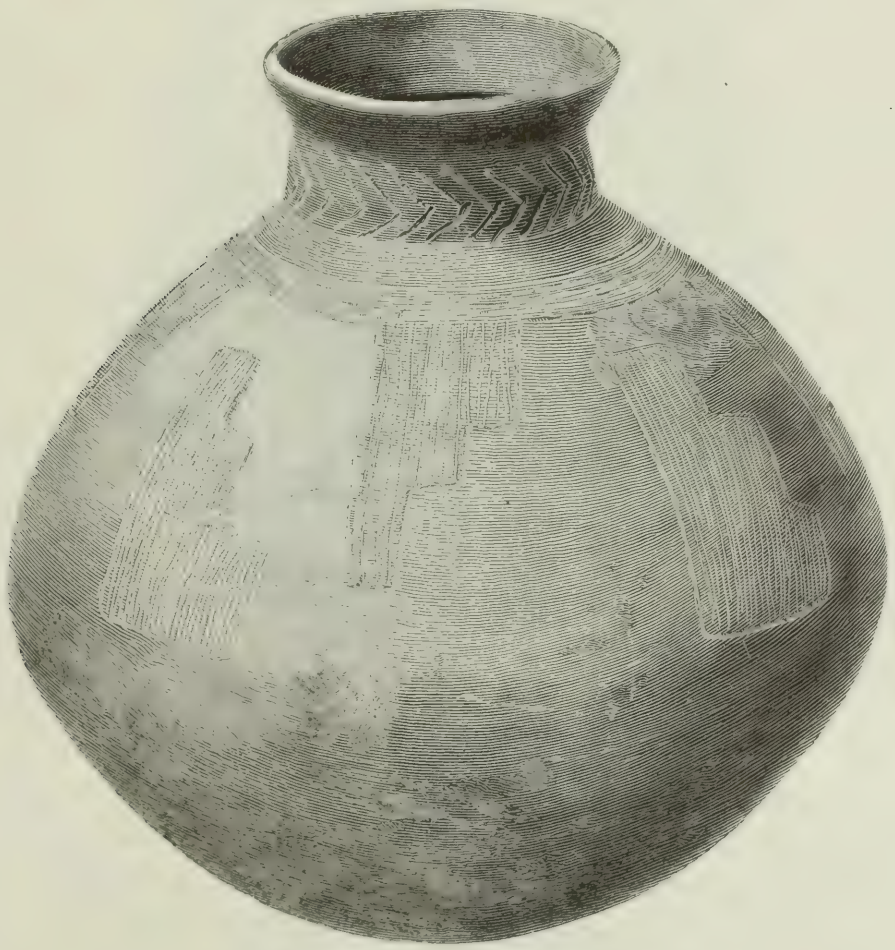


FIG. 434.—Bottle: Arkansas.—½.

[*National Museum.*]

The handsome vase shown in Fig. 434 is of a somewhat different type from the preceding. It was obtained, along with many other fine specimens, from mounds near Little Rock, Arkansas. It is of the dark polished ware with the usual fire mottlings. The form is symmetrical and graceful. The neck is ornamented with a band of incised chevrons and

the sloping upper surface of the body, viewed from above, has a cruciform arrangement of stepped figures engraved in the plastic clay.

One of the most striking of the bottle-shaped vases is shown in Fig. 435. It is symmetrical in shape, well proportioned and well finished. The color is now quite dark and the surface is roughened by a multitude of pits which have resulted from the decay of shell particles. The paste crumbles into a brownish dust when struck or pressed forcibly.

FIG. 435.—Engraved bottle: Arkansas.—⅓.

[*National Museum.*]

By far the most remarkable feature of the piece is the broad, convex hood-like collar that encircles the neck and spreads out over the body like an inverted saucer. This collar is curiously wrought in incised lines and low ridges by means of which two grotesque faces are produced. The eyes are readily detected, being indicated by low knobs with central pits surrounded each by three concentric circles. They are arranged in pairs on opposite sides. Between the eyes of each pair an incipient nose and mouth may be made out. The face is outlined below by the lower edge of the collar and above, by a low indented ridge crossing the collar tangent to the base of the neck.

The most expanded part of the body is encircled by an incised pattern consisting of five sets of partially interlocked scrolls—an ornament characteristic of the pottery of Arkansas.

Modifications of the simple outlines of bottles exhibit many interesting peculiarities. Compound forms are not unusual and consist generally of imitations of two vessels, the one superimposed upon or set in the mouth of another. A good example in the ordinary plain dark ware is given in Fig. 436. Similar shapes are suggested by lobed forms of the gourd.

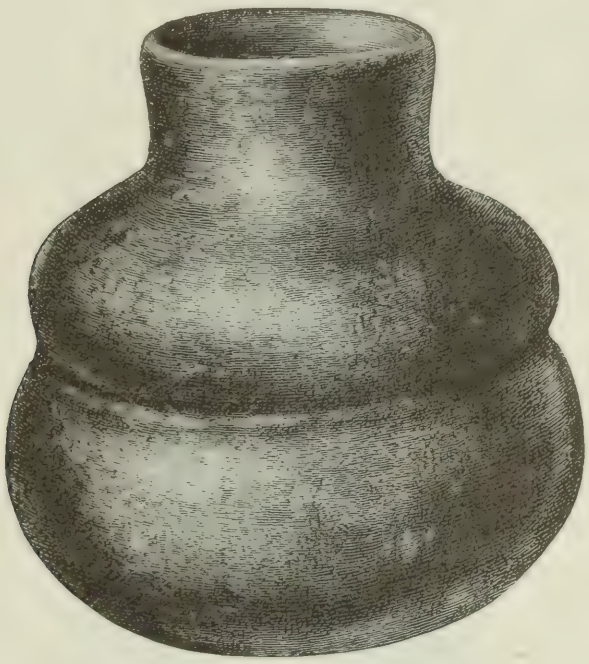


FIG. 436.—Bottle: Arkansas.—$\frac{1}{3}$.

Other specimens may be seen in which there is only a gentle swelling of the neck, but all gradations occur between this condition and that in which forms of two vessels distinctly appear.

A very usual form is illustrated in Fig. 437. Below the overhanging lip the neck contracts and then expands until quite full, and at the base contracts again. This feature corresponds to the upper vessel suggested in the preceding case. Four flattened handles are placed about

FIG. 437.—Bottle: Pecan Point, Arkansas.—$\frac{1}{3}$.

the upper part of the neck and three rows of small conical pits encircle the most expanded portion. The body is plain and much com-

pressed vertically. A low wide stand is attached to the base. A number of good examples, now in the National Museum, were found in Arkansas.

The vase shown in Fig. 438 has also the double body, the vessels copied having been somewhat more elaborately modeled than in the preceding cases. A bottle is set within the mouth of a pot. The neck is high, wide, and flaring and rests upon the back of a rudely modeled frog, which lies extended upon the upper surface of the body. The notched encircling ridge beneath the feet of the reptile represents the rim of the lower vessel, which is a pot with compressed globular body

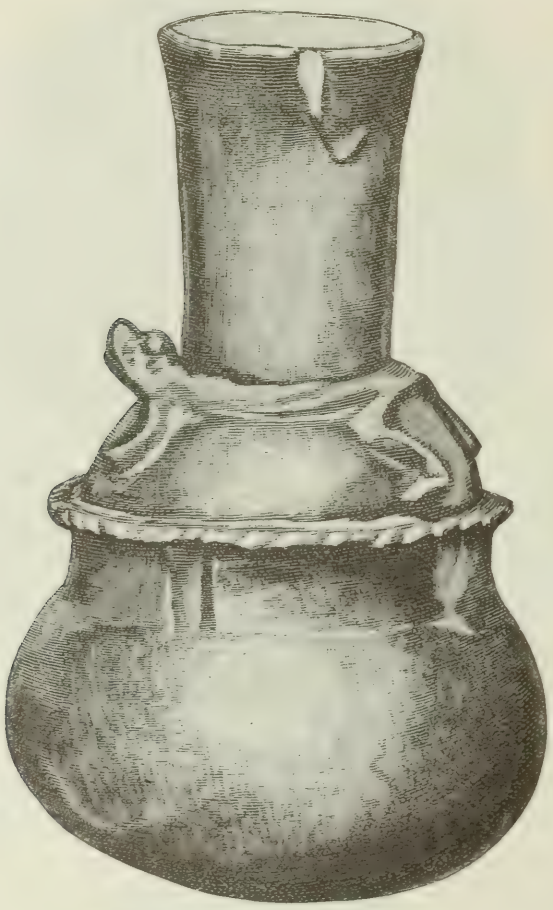


FIG. 438.—Bottle: Arkansas.—$\frac{1}{3}$.

and short, wide neck. This vase is of the dark, dead-surfaced ware and is quite plain. Four vertical ridges take the place of handles. I have observed other examples in which two vessels, combined in this way, served as models for the potter; one, a shell set within a cup, is illustrated in the Third Annual Report of the Bureau of Ethnology; another is given in Contributions to the Archæology of Missouri.

Fig. 439 illustrates a rather graceful form of bottle. It is furnished with a rather high perforated stand or foot, and the body is fluted vertically with narrow, widely separated channels. The neck is high and flaring and has a narrow notched collar at the base.

There are many good examples of engraved geometric designs upon bottle-shaped vessels. One of the most elaborate is presented in Fig.

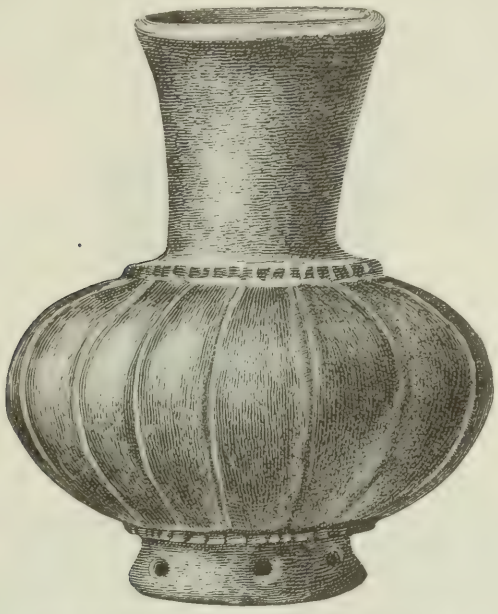


FIG. 439.—Fluted bottle: Arkansas.—$\frac{1}{3}$.

440. This vessel has a full, wide neck, a heavy, flattened body, and a broad rudimentary foot. The color is quite dark, and the surface well polished. The engraved design consists of four elaborate, interlinked

FIG. 440.—Engraved bottle: Arkansas.(?)—$\frac{1}{3}$.

scrolls, comprising a number of lines, and bordered by wing-like, triangular figures, filled in with reticulated lines. This latter feature is often associated with native delineations of mythic reptiles, and it is

not impossible that this scroll work is a highly conventionalized form of some such conception. The four volute centers are slightly concave.

Three excellent examples of tripod bottles are illustrated in the accompanying figures. The first, Fig. 441, is a large-necked, rather clumsy vessel of ordinary workmanship, which rests upon three globular legs.

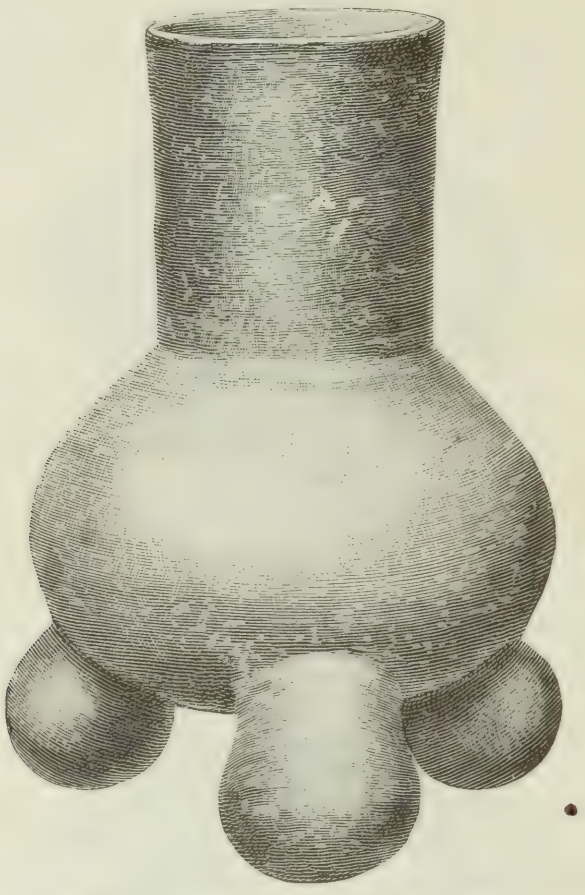


FIG. 441.—Tripod bottle: Arkansas.(?)—$\frac{1}{3}$.

These are hollow and the cavities connect with that of the body of the vessel. The whole surface is well polished and very dark.

The vessel depicted in Fig. 442 has a number of noteworthy features. In shape, it resembles the preceding with the exception of the legs, which are flat and have stepped or terraced margins. The whole surface of the vessel is decorated with characteristic designs in red and white upon a warm gray ground. A stepped figure, resembling the Pueblo emblematic "rim of the sky," encircles the neck, and semicircular figures in white appear on opposite sides at the top and base. The body is covered with scroll work in broad red lines, the spaces being filled in with white in the form of a thick earthy paste. Each of the legs has one-half red and the other white.

The vessel illustrated in Fig. 443 is of ordinary, dark, polished ware, and is entirely plain. It is peculiar in the shape of its extremities. The neck resembles a long truncated cone, and the legs are heavy and conical, being not unlike those of a common iron pot.

Eccentric forms.—In this place I am able to give but one example of what I have denominated eccentric forms. Others have been indicated

on preceding pages. The vase given in Fig. 444 has a flattish, ovoidal body from the opposite ends of which springs a hollow arch—a sort of double neck. This has been perforated at the highest point, and a low

FIG. 442.—Tripod bottle: Arkansas.—$\frac{1}{3}$.

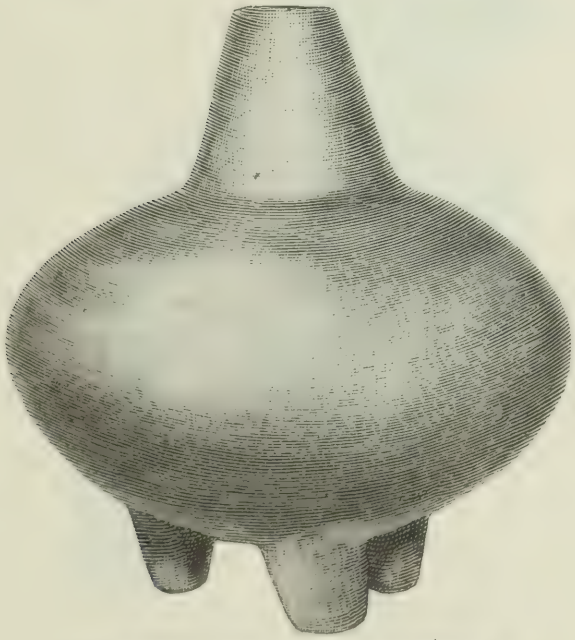


FIG. 443.—Tripod bottle: Arkansas.—$\frac{1}{3}$.

recurving rim, which serves as the mouth of the vessel, has been attached.

Another example of this form has recently been received at the Davenport Museum. It is in fragments, but was originally nicely finished and painted. Illustrations of others may be seen in the Third Annual Report of the Bureau of Ethnology, and in Contributions to

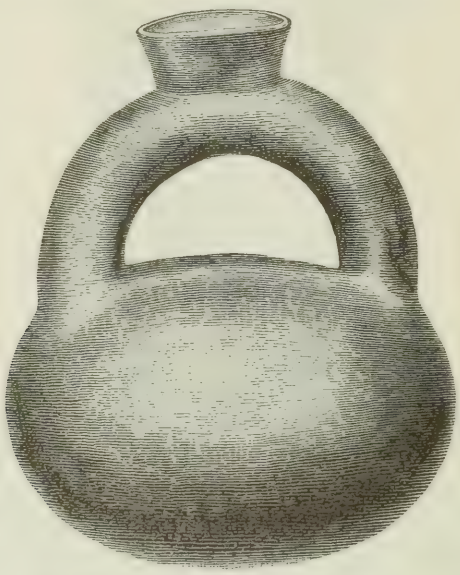


FIG. 444.—Bottle of eccentric form: Pecan Point, Arkansas—$\frac{1}{3}$.

the Archæology of Missouri. The specimen illustrated was found at the foot of a skeleton in a grave at Pecan Point.

This shape is common to the art of many countries, and was a great favorite in ancient Peru.

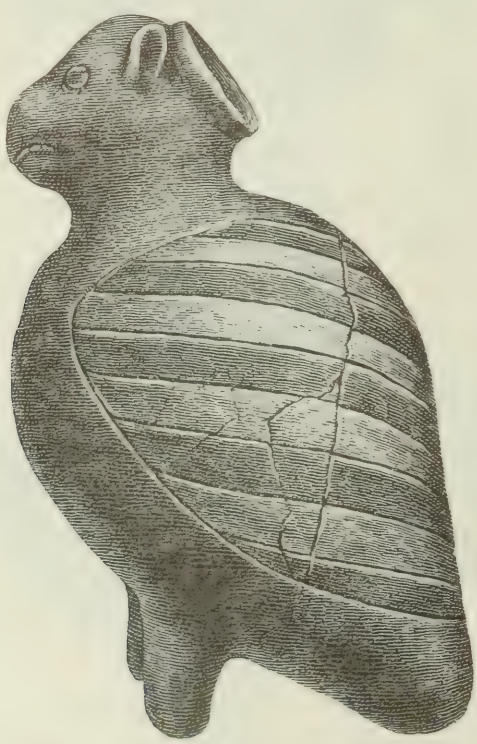


FIG. 445.—Owl-shaped bottle: Arkansas.—$\frac{1}{3}$.

Life forms.—In the introduction to this section, I have indicated the many ways in which the human form is employed in the embellishment

or the elaboration of bottles. Birds, beasts, fishes, and reptiles are treated in a similar manner.

The owl was a favorite subject with the potter, probably on account of the upright, compact figure of the body, or possibly because of some especial regard in which this bird was held.

A rather handsome specimen is shown in Fig. 445. The modeling is more than usually successful, and the surface is carefully finished. The wings are treated in a pleasing but highly conventional manner. The plumage is indicated by alternate bands of pale-red and yellow-gray, the latter being the ground color. These bands are outlined by fine incised lines. The remainder of the body is painted red. The vessel rests upon the feet and tail—a natural tripod. In many cases the head of the bird forms the top of the neck of the bottle—the body of the vessel itself being plain and globular.

FIG. 446.—Hale's Point, Tennessee.—$\frac{1}{3}$.

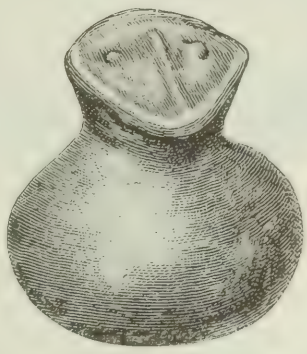


FIG. 447.—Arkansas (?).—$\frac{1}{3}$.

The heads of animals are treated in the same manner, as may be seen by reference to Figs. 446 and 447.

The head shown in Fig. 446 is clearly that of a bear. The whole vessel is painted red. Fig. 447 illustrates a small dark bottle, surmounted by a head of nondescript character. The aperture in these vessels is generally at the back of the head.

Fish and reptiles appear somewhat more rarely in connection with high-necked bottles. The Davenport Museum has recently acquired a fine example, painted in red and white, which has the head and other features of a fish, modeled in relief upon the sides and bottom of the body. A small, dark vessel of like character is illustrated in the Third Annual Report of the Bureau of Ethnology.

In the example given in Figs. 448 and 449 the upper part of the neck has been modified in such a way as to accommodate a curious, medallion-like relievo of the human face, while in Figs. 450 and 451 the neck is replaced by grotesque heads, the latter being intended apparently for an owl.

These potters dealt with the human figure in a very bold manner for savages. They were evidently capable of representing many creatures with accuracy, but preferred grotesque or conventional forms. A man

or a woman is generally modeled with a large body and a curious hunched back, the vertebræ appearing along the prominent ridge. The shoulder blades are usually shown with anatomical distinctness, if not with precision; the arms are long and slender and the hands rest upon the knees or the sides. The position assumed is mostly that of kneeling or

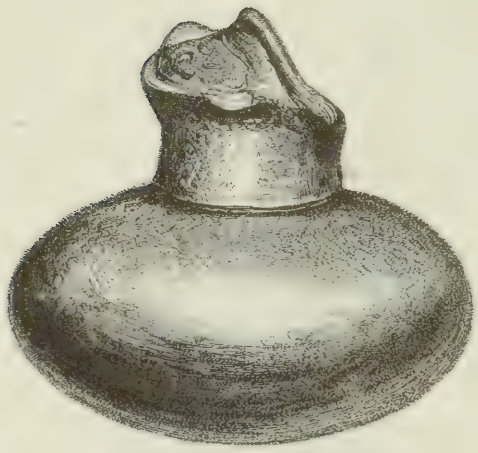


FIG. 448.—Bottle: Arkansas—$\frac{1}{3}$.

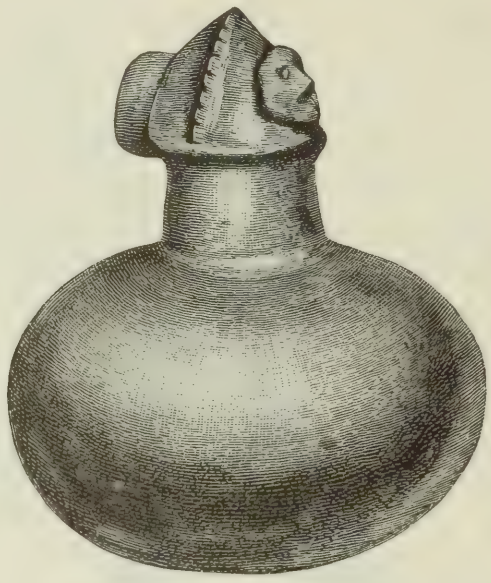


FIG. 449—Bottle: Arkansas—$\frac{1}{3}$.

squatting, the feet being doubled up beneath and uniting with the bottom of the vessel.

These effigy vases are numerous, and greatly varied in size and color. They are mostly of the dark ware, but are found painted plain red or in red and white figures, some of which represent parts of the costume,

FIG. 450.—Bottle: Arkansas.—$\frac{1}{3}$.

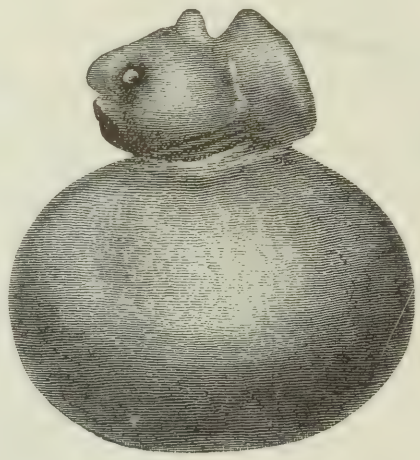


FIG. 451.—Bottle: Arkansas.—$\frac{1}{3}$.

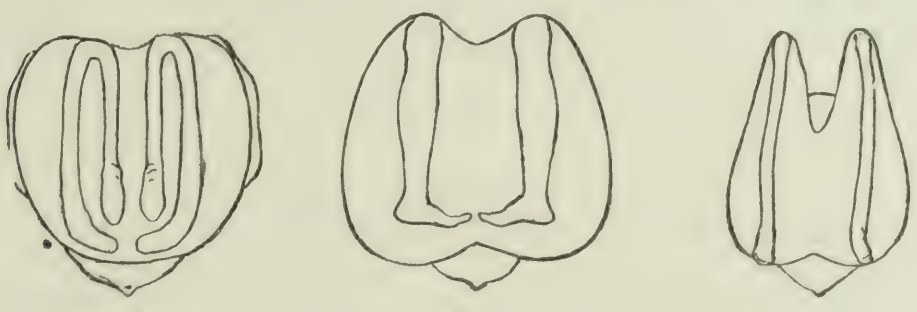
others, emblematic devices. The largest specimen with which I am acquainted is illustrated in Fig. 452. It is well modeled, a good deal of attention having been given to the details of anatomy. The back is very much humped, and the vertebræ are represented by a series of knobs. The position of the feet beneath the body is, perhaps, worthy

of notice. This is shown in Fig. 453*b*. It will be seen that the knees, calves, ankles, and the various parts of the feet are indicated with an approach to accuracy. The projecting back is seen below. The bottom of the vessel is nearly flat, and the legs are modeled in low relief upon it. Other positions are shown in Fig. 453.

FIG. 452.—Effigy bottle: Arkansas.—$\frac{1}{3}$.

Fig. 454 illustrates a characteristic profile.

One of these vases has a cross painted upon the breast of the personage represented. The kneeling position, taken in connection with the cross, leads to the thought that perhaps the potter lived in the period



a. *b*. *c*.

FIG. 453.—Positions of feet.

of the French missionary, and attempted to model him in clay. There is, however, no indication of costume, and the painting, with the excep-

tion of the cross, is in a purely aboriginal style of design. The ground color of the vase is, as usual, a moderately dark gray brown, and the painted figures are laid on in thick, blackish paint. Lines partially encircle the eyes, and extend down over the cheek to the neck, and a line passes around the mouth and extends down over the chin, neck, and chest to the base of the body. The horizontal bar of the cross connects the nipples. The shoulder blades and the hands are also painted black. The back is very curiously modeled and painted.

FIG. 454.—Effigy bottle: Arkansas.—⅓.

FIG. 455.—Effigy bottle: Arkansas.—⅓.

There are in the collection a number of specimens that do not come under either of the preceding heads. Of these I may mention three small figures from Paducah, Kentucky, which represent a snake, a man, and a deer. They are very rudely done, and are possibly modern work.

Attention should be called to some small specimens resembling toadstools or mushrooms in shape, some of which may have been stoppers for bottles, while others could have served as implements in some of the arts. One of these pieces has a distinctly vitrified surface. Its age, however, cannot be determined.

There are a few rude pipes of usual forms and of no special interest.

The comparative scarcity of these articles, so plentiful in some of the mound districts, is certainly worthy of the attention of archæologists.

UPPER MISSISSIPPI PROVINCE.

I have already pointed out the fact that most of the pottery of the Upper Mississippi region belongs to a distinct family. It has never been as abundant as the pottery of the more southern sections of the country and is not well represented in our museums. There are only a few pieces in the Davenport collection and these are all in a more or less

fragmentary state. A majority are from a mound near the city of Davenport, but a limited number came from Wisconsin.

At this time it is impossible to define, with any degree of precision, the geographical limits of this class of ware. The tribes by whom it was manufactured have evidently, at one time or another, occupied the greater part of the Mississippi basin north of the mouth of the Missouri River. Similarities of material, shape, methods of manufacture, and ornamentation, tend to show that we must include the greater parts of the States of Iowa, Wisconsin, Michigan, Illinois, Indiana, and Ohio, in the area covered by this or closely related ceramic groups, and indications of its presence are discovered far beyond these limits. The mounds of Manitoba have recently furnished examples of this class of ware, and it has decided relationships with the ware of the Eastern and Northeastern States. It is not yet time to draw close distinctions, as sufficiently detailed studies of the products of the various districts have not been made.

On the shelves of our museums the difference between the two great families of the middle and Upper Mississippi are strikingly manifest. The ware of the former district, as already shown, exhibits variously tinted pastes tempered with coarsely pulverized shells or potsherds; the vases, as a rule, having full bodies, well rounded bases, and in very many cases, narrow necks. They exhibit great variety of decoration and no little care in finish. The northern family shows a dark paste tempered with sand, often apparently granitic; a rough fracture, and generally a rude finish. The shapes are comparatively simple, often long, tapering below, and flat bottomed. The ornamentation is totally unlike that of the southern variety. It consists of cord impressions, incised lines, and implement indentations arranged in figures peculiar to the district. There are many other features that, like the subtile characters of human physiognomy, cannot easily be described, but which are of first importance as indices of relationship or the lack of it.

The best preserved of the Davenport specimens was described and illustrated in the first volume of the proceedings of the Davenport Academy. This vessel, Fig. 456, was found in a mound near Davenport along with human remains, and closely associated with other relics, among which were several copper implements covered with coarse woven fabrics. Its height is eleven inches, width of aperture seven and a half inches, and diameter of base four inches. It is estimated to contain a little over one gallon.

There is a broad, shallow constriction at the neck. The walls are from one-fourth to three-eighths of an inch thick, and the margin of the rim is squared off, showing the full thickness—a strong characteristic of the northern pottery. The form is nearly symmetrical, and the surface is hand-smoothed but not polished. The paste is now dark and crumbling, and shows a rough fracture. A large percentage of sand was used in tempering. The color is a dark gray-brown. The

entire surface, with the exception of a narrow band about the base, has been covered with ornamentation. This is executed with considerable care, and shows a great deal of ingenuity and some taste. There is apparently no feature copied from nature or from ideographic art. Two or three distinct implements have been used. A part of the neck ornament was made by rolling back and forth a circular tool, a *roulette*, the edge of which was notched. A row of indented nodes has been produced upon the exterior surface of the neck by impressing upon the inside the end of a reed or hollow bone about one-fourth of an inch in diameter. Patterns of bold, rather carelessly drawn lines cover the body and seem to have been made by trailing, under pretty strong

FIG. 456.—Vase: Davenport, Iowa.—$\frac{1}{3}$.

pressure, the smooth point of a stylus—probably the bone or reed already suggested. Some of the larger indentations upon the lower part of the neck may have been made by the same implement held in an oblique position. The use to which this vessel was applied can hardly be guessed. It was found with the remains of its owner, and probably contained food or drink.

Another smaller vessel from the same locality and found under similar conditions shows the same characteristics of material, form, and ornament. There are also a few other fragments of the same ware from this group of mounds. One of these shows that decoration by the indentation of twisted cords was practiced here as elsewhere. A similar

vase tastefully decorated with indented lines about the neck, and a band of decoration consisting of broad, plain, sinuous bands upon the body, comes from a mound in Scott County, Iowa. Height six inches, diameter the same. The rims of all these vessels are square on the edge, showing the full thickness of the walls.

A very interesting vessel obtained by Captain Hall from a mound in Wisconsin is represented by a number of large fragments, probably comprising about one-half of the walls. It must have been somewhat larger than the vase given in Fig. 456, and in a general way resembles it closely. It appears to be more pointed below than the other, and has a slightly flaring rim. The walls are one-fourth of an inch thick. The paste is coarse and is tempered with sand, as in the cases already described. The lower part of the body is covered with nearly vertical cord marks. The upper part was smoothed, rather rudely, for the reception of additional decoration, which consists of several bands of indented figures.

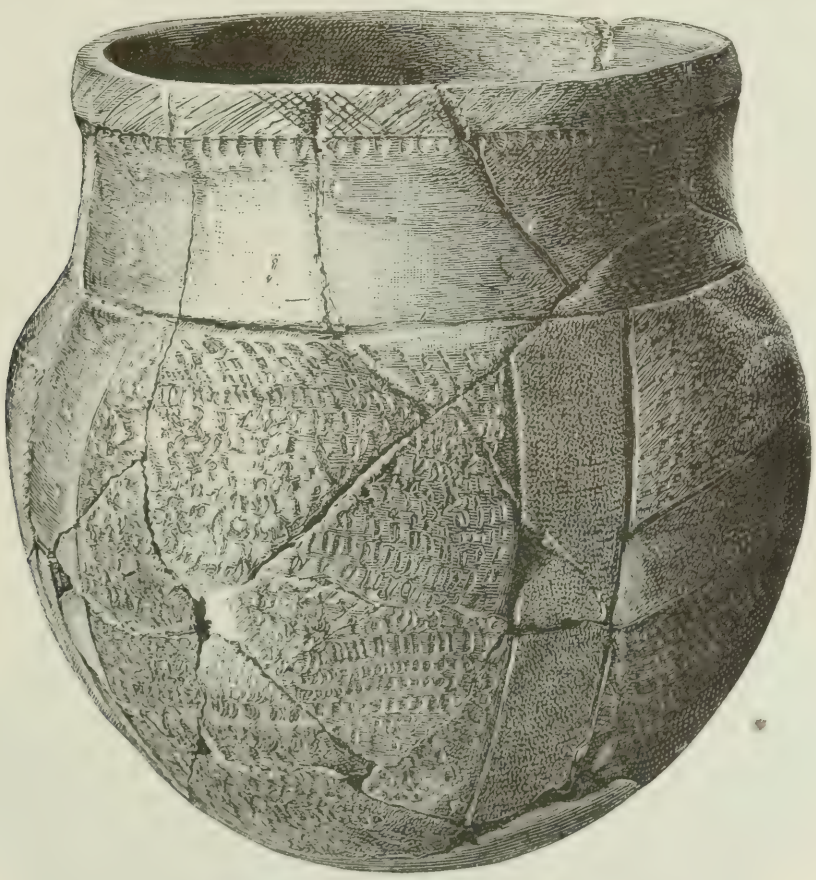


FIG. 457.—Vase: Wisconsin.—$\frac{1}{2}$.

[*National Museum.*]

The principal implement used was apparently a stiff cord, or a slender osier wrapped with fine thread, which has been laid on and impressed with the fingers, forming nearly continuous encircling lines. Bands of short oblique lines made in the same manner also occur. Just below the margin there is a line of annular indentations made from the exterior, leaving nodes on the inside—the reverse of the treatment noticed in the vessel already illustrated. Fragments of identically marked

ware from the vicinity of Prairie du Chien may be seen in the National Museum.

A large fragment from Baraboo County, Wisconsin, shows a full body and a slightly flaring rim. The upper part is ornamented with horizontal lines of annular indentations, and the body is covered with rather rude patterns made by rolling a notched wheel or *roulette* back and forth in zigzag lines.

Two handsome pieces of this ware were recently obtained by the Bureau of Ethnology from a mound in Vernon County, Wisconsin. The finest of these, which is shown in Fig. 457, is six and a half inches in height, and in symmetry and finish rivals the best work of the south. The paste is dark, compact, and fine grained, and tempered apparently with sand. The color of the surface is a rich, mottled brown. The most striking feature of the decoration consists of a number of polished bands, extending in divers directions over the surface, the interstices being filled in with indented figures. The lip is smooth and the margin rounded. The exterior surface of the narrow collar is ornamented with oblique lines made by a *roulette*, and crossed at intervals with fine incised lines. The neck is slightly constricted, and is encircled by a polished zone one and one-fourth inches wide, having a line of indentations along the upper edge. The body is separated into four lobes by four vertical, depressed, polished bands about one inch wide. Two of these lobes are crossed obliquely by similar polished bands. These bands were all finished with a polishing implement, and are somewhat depressed, probably the result of strong pressure with this tool. They are bordered by wide incised lines. The intervening spaces are indented with a *roulette.*

FIG. 458.—Vase; Illinois.—$\frac{3}{4}$.

A handsome little vessel, obtained from a mound at Albany, Whiteside County, Illinois, is illustrated in Fig. 458. It apparently belongs to the silicious ware of the north. The shape and ornamentation are

somewhat novel. Four large flattish lobes occur about the body, on each of which a figure somewhat resembling a Maltese cross has been made by incising or impressing broad, shallow lines. The remainder of the body is covered with marks that resemble impressions of a coarse osier basket. This specimen was collected by Mr. C. A. Dodge, and a short description was published by Prof. W. H. Pratt in the third volume of the proceedings of the Davenport Academy.

GULF PROVINCE.

Our museums contain but few pieces of pottery from the Lower Mississippi, and in the Davenport Academy collection there are probably not more than a dozen typical examples of the leading varieties of ware of the Gulf States. Louisiana and Mississippi have furnished some very fine specimens of the pottery of the middle province, more refined, perhaps, in form, material, and finish than the ware of Arkansas and Missouri, but still differing decidedly from the typical pottery of Alabama and Georgia. Not wishing at present to enter upon the detailed study of the latter class of ware, I shall present only the few examples contained in the Davenport collection. The southern ware is characterized by refinement of outline, color, finish and ornament, and is distinguished from that of the Middle Mississippi by its material, which is a fine-grained paste, tempered with very fine silicious matter instead of pulverized shells.

The little cup given in Fig. 459 is from Mobile, Alabama. It is pointed at opposite ends and was probably modeled after or within some

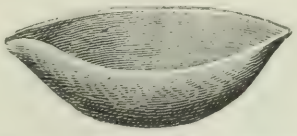


FIG. 459.—Cup: Alabama.—$\frac{1}{3}$.

basket or fruit shell, the impressions from which are seen on the surface. The paste contains no perceptible tempering material.

The largest and most pleasing vessel of this class is from Alabama, and is shown in Fig. 460.

The aperture is ten and a half inches in diameter, and the height nine and one-half inches. The form is full above and somewhat conical below. The walls are thin and even and the surface well polished.

The color is dark and shows the usual fire mottlings. There is no admixture of shell material, finely pulverized micaceous matter appearing in its place. The ornamentation is simple, but is applied in a way to greatly enhance the beauty of the vessel. It consists of a single broad zone of incised figures. Three zigzag lines meander the middle

of the band and the intervening triangles are filled in with groups of straight lines. All the lines are well drawn and appear to have been cut with a sharp point in the dry clay.

FIG. 460.—Bowl: Alabama.—$\frac{1}{3}$.

Bottle-shaped vases are not found to any great extent outside of the Mississippi Valley, and are quite rare in Alabama, Georgia, and Florida.

The piece illustrated in Fig. 461 is from Mississippi, and in most re-

FIG. 461.—Bottle: Mississippi.—$\frac{1}{3}$.

spects is identical with the ware of the Gulf Province. The paste is silicious, fine-grained, and quite hard. The color is slightly ferruginous

and clouded with fire stains from the baking. The body is ornamented with the engraved figure of a bird apparently intended for an eagle. The head, with its notched and strongly curved beak and conventionalized crest, occupies one side. The wings may be seen at the right and left, while the tail appears on the side opposite the head. The flattened base of the vessel occupies the place of the body. The lines have been scratched with a sharp point in the hardened clay. Certain spaces in the plumes, wings, and tail are filled in with reticulated lines.

The bottle presented in Fig. 462 is embellished with a rather remarkable design in color. The material is fine grained and without admixture of shell. The color of the paste is a pale, salmon gray. The surface is coated with a thick slip or enamel of whitish clay, very fine grained and smooth; upon this the design was painted, not in the thick earthy color employed farther north, but in what appears to be a dark purplish-gray stain. The design upon the body is wholly unlike anything yet described. It is developed in the light ground tint by filling in the interstices with the dark color. The peculiar character of

FIG. 462.—Bottle: Alabama.—$\frac{1}{3}$.

this design inclines me to the view that it probably had an ideographic origin, although possibly treated here as pure decoration. The open hand is sometimes seen, in both the decorative and the symbolic work of the Gulf coast tribes, and is not unknown elsewhere. The figures alternating with the hands are suggestive of a highly conventionalized face, the eyes being indicated by the volutes and the mouth and teeth by the lower part of the figure, as will be seen in the fully projected design, Fig. 463. The neck has two indistinct bands of triangular dentate figures apparently painted in the dark color. The bottom is flat-

tish and without the coating of light clay. Both paste and slip can be readily scratched with the finger nail. This vase was found in Franklin County, Alabama, near the Mississippi line.

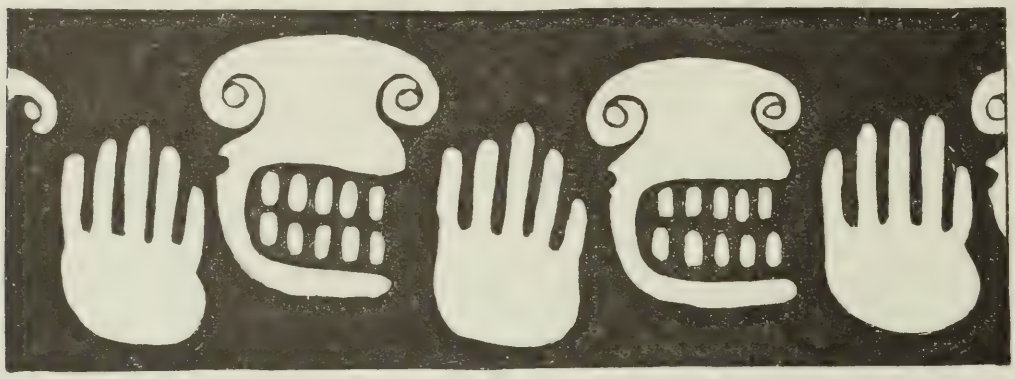


FIG. 463.—Painted design.

RÉSUMÉ.

Attention has been called to the great numbers of pieces of earthenware recovered from the mounds and graves of the middle province of the Mississippi Valley. In certain districts—as remarked by one of our collectors—we have but to dig to fill museums. Such districts must have been occupied for a long period by a numerous people who recognized the claims of the dead upon their worldly treasures. The burial grounds of many other sections of the American continent are correspondingly rich in ceramic remains.

The vessels were not to any extent cinerary, and probably not even mortuary in the sense of having been constructed especially for inhumation with the dead. They were receptacles for food, drink, paint, and the like, placed in the grave along with other possessions of the departed in obedience to the demands of an almost universal custom.

The material employed in manufacture embraced clay in all grades of refinement, from coarse loamy earths to the refined slips used in surface finish. The tempering materials—used in greater or lesser quantity according to the character of the vessel to be made—consisted of shell, sand, and potsherds reduced to various degrees of pulverulence.

The stage of the art represented by this ware is one of hand building purely. No lathe or other revolving device was known, although varieties of improvised molds—baskets, gourds, and the like, such as are known to nearly all pottery-making peoples—were frequently enployed.

The highest degree of finish known was attained by the application of a slip or wash of fine clay which was given a good degree of mechanical polish by means of a smooth implement held in the hand. Ornament was produced by both flat and plastic methods. The colors used in painting were white, black, and red earths. The plastic subjects were incised, stamped, relieved, and modeled in the round.

The period was one of open-air baking, a moderate degree of hard-

ness being secured. The texture was porous and the vessels were without resonance. The paste exhibits two distinct varieties of color which may be described roughly as light and dark. A certain range of dark hues—blacks, browns, and grays—were probably produced by "smother baking." Another set of colors embracing light reddish and yellowish grays resulted from changes in the clay produced by simple open air baking.

A feature worthy of especial note is the great diversity of form—indicating a long practice of the art, a high specialization of uses, and a considerable variety in the originals copied. The manual skill exhibited is of no mean order. Symmetry of form combined with considerable grace of outline has been achieved without the wheel—a result attained in still greater perfection by other American races. Notwithstanding the great diversity of the forms of vessels, the very primitive condition of the art is indicated by the absence of bricks, tiles, whistles, lamps, spindle-whorls, toys, and statuettes. The models from which the vessels were copied must have been quite varied, comprising shells of mollusks—marine and fresh-water—gourd shells of varying shapes, and vessels of wicker, bark, horn, and wood, such as are in common use with our western and northern tribes.

The execution of the ornamental designs indicates a rather low grade of skill. This is especially true of work in color, which has the appearance of a newly acquired art. Intaglio and relief work evinces much greater skill—the incised forms especially giving evidence of long experience.

In subject-matter the ornament employed bespeaks nothing higher perhaps than could be expected of our historic tribes. The great body of the devices are geometric, and comprise such motives as could have developed within the art or that might have been borrowed from closely associated arts. A small percentage of incised linear designs come, apparently, from mythologic sources, and delineate, in a rude way, both men and animals.

The modeling of life forms in connection with earthen vessels constitutes a feature of considerable interest, the highest known achievement being represented by a series of vases imitating human heads. Animal forms are generally rudely modeled, the imitation of nature having been apparently a secondary consideration—the associated idea or the fancy for the grotesque being the stronger motive. The animal forms are inferior to those carved in stone by some of the mound-building peoples.

That any of these images were idols in the ordinary acceptation of the term is an idea that cannot be entertained. They are always associated directly with vessels, and could not be more than representations of the tutelary deities supposed to be interested in the uses or ceremonies to which the vessels were assigned.

In form there are many suggestions of the characteristic utensils of

the north, in ornament there are occasional hints of the south—of Caribbean and Mexican art.

With the Pueblo peoples, notwithstanding their proximity, there is hardly a hint of relationship of any kind. Unlike the Pueblos, the ethnical environment of the Mississippi Valley races would seem to have been considerably diversified; there was less isolation; yet there are strong indications that the art is mainly of indigenous growth, as there is unity and consistency in all its features.

In reference to the period of culture represented by this ware, a few words may be added. There is no feature in it that could not reasonably be expected of the more advanced historic tribes of the valley. It indicates a culture differing in many ways from that of the Pueblos, ancient and modern, but on the whole rather inferior to it. The work of Mexico, Central and South America is decidedly superior in every essential feature.

There are many difficulties in the way of instituting a comparison of this work with that of the primitive work of the Old World. These I shall not stop to present in this place. In the most general way, I may say that the ceramic art of the Middle Mississippi is apparently superior to that of the stone age in Europe, but little can be inferred in regard to relative grades of culture. In classic countries it is difficult to find its true equivalent. To reach a stage of art correspondingly low we shall have to go behind the heroic age—to pass down through more than the five prehistoric cities of the hill of Hissarlik and descend into the lowest archæologic substratum. Even this, unless it represent the first achievement of that grade of art upon the continent, would afford uncertain data for comparative study.

A given grade of ceramic achievement runs so freely up and down the scale of culture that alone its evidence is of little value in determining culture status.

SMITHSONIAN INSTITUTION——BUREAU OF ETHNOLOGY.

ORIGIN AND DEVELOPMENT

OF

FORM AND ORNAMENT IN CERAMIC ART.

BY

WILLIAM H. HOLMES.

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ORIGIN AND DEVELOPMENT OF FORM AND ORNAMENT IN CERAMIC ART.

By William H. Holmes.

INTRODUCTORY.

For the investigation of art in its early stages and in its widest sense there is probably no fairer field than that afforded by aboriginal America, ancient and modern.

At the period of discovery, art at a number of places on the American continent seems to have been developing surely and steadily, through the force of the innate genius of the race, and the more advanced nations were already approaching the threshold of civilization; at the same time their methods were characterized by great simplicity, and their art products are, as a consequence, exceptionally homogeneous.

The advent of European civilization checked the current of growth, and new and conflicting elements were introduced necessarily disastrous to the native development.

There is much, however, in the art of living tribes, especially of those least influenced by the whites, capable of throwing light upon the obscure passages of precolumbian art. By supplementing the study of the prehistoric by that of historic art, which is still in many cases in its incipient stages, we may hope to penetrate deeply into the secrets of the past.

The advantages of this field, as compared with Greece, Egypt, and the Orient, will be apparent when we remember that the dawn of art in these countries lies hidden in the shadow of unnumbered ages, while ours stands out in the light of the very present. This is well illustrated by a remark of Birch, who, in dwelling upon the antiquity of the fictile art, says that "the existence of earthen vessels in Egypt was at least coeval with the formation of a written language."[1] Beyond this there is acknowledged chaos. In strong contrast with this, is the fact that all precolumbian American pottery *precedes* the acquisition of written language, and this contrast is emphasized by the additional fact that it also antedates the use of the wheel, that great perverter of the plastic tendencies of clay.

[1] Birch: History of Ancient Pottery, 1873, p. 8.

The material presented in the following notes is derived chiefly from the native ceramic art of the United States, but the principles involved are applicable to all times and to all art, as they are based upon the laws of nature.

Ceramic art presents two classes of phenomena of importance in the study of the evolution of æsthetic culture. These relate, first, to *form* and second, to *ornament.*

Form, as embodied in clay vessels, embraces, 1st, *useful shapes*, which may or may not be ornamental, and, 2d, *æsthetic shapes*, which are ornamental and may be useful. There are also *grotesque* and *fanciful shapes*, which may or may not be either useful or ornamental.

No form or class of forms can be said to characterize a particular age or stage of culture. In a general way, of course, the vessels of primitive peoples will be simple in form, while those of more advanced races will be more varied and highly specialized.

The shapes first assumed by vessels in clay depend upon the shape of the vessels employed at the time of the introduction of the art, and these depend, to a great extent, upon the kind and grade of culture of the people acquiring the art and upon the resources of the country in which they live. To illustrate: If, for instance, some of the highly advanced Alaskan tribes which do not make pottery should migrate to another habitat, less suitable to the practice of their old arts and well adapted to art in clay, and should there acquire the art of pottery, they would doubtless, to a great extent, copy their highly developed utensils of wood, bone, ivory, and basketry, and thus reach a high grade of ceramic achievement in the first century of the practice of the art; but, on the other hand, if certain tribes, very low in intelligence and having no vessel-making arts, should undergo a corresponding change of habitat and acquire the art of pottery, they might not reach in a thousand years, if left to themselves, a grade in the art equal to that of the hypothetical Alaskan potters in the first decade. It is, therefore, not the age of the art itself that determines its forms, but the grade and kind of art with which it originates and coexists.

Ornament is subject to similar laws. Where pottery is employed by peoples in very low stages of culture, its ornamentation will be of the simple archaic kind. Being a conservative art and much hampered by the restraints of convention, the elementary forms of ornament are carried a long way into the succeeding periods and have a very decided effect upon the higher stages. Pottery brought into use for the first time by more advanced races will never pass through the elementary stage of decoration, but will take its ornament greatly from existing art and carry this up in its own peculiar way through succeeding generations. The character of the ornamentation does not therefore depend upon the age of the art so much as upon the acquirements of the potter and his people in other arts.

ORIGIN OF FORM.

In order to convey a clear idea of the bearing of the preceding statements upon the history of form and ornament, it will be necessary to present a number of points in greater detail.

The following synopsis will give a connected view of various possible origins of form.

Origin of form
- By adventition.
- By imitation
  - Of natural models.
  - Of artificial models.
- By invention.

FORMS SUGGESTED BY ADVENTITION.

The suggestions of accident, especially in the early stages of art, are often adopted, and become fruitful sources of improvement and progress. By such means the use of clay was discovered and the ceramic art came into existence. The accidental indentation of a mass of clay by the foot, or hand, or by a fruit-shell, or stone, while serving as an auxiliary in some simple art, may have suggested the making of a cup, the simplest form of vessel.

The use of clay as a cement in repairing utensils, in protecting combustible vessels from injury by fire, or in building up the walls of shallow vessels, may also have led to the formation of disks or cups, afterwards independently constructed. In any case the objects or utensils with which the clay was associated in its earliest use would impress their forms upon it. Thus, if clay were used in deepening or mending vessels of stone by a given people, it would, when used independently by that people, tend to assume shapes suggested by stone vessels. The same may be said of its use in connection with wood and wicker, or with vessels of other materials. Forms of vessels so derived may be said to have an adventitious origin, yet they are essentially copies, although not so by design, and may as readily be placed under the succeeding head.

FORMS DERIVED BY IMITATION.

Clay has no inherent qualities of a nature to impose a given form or class of forms upon its products, as have wood, bark, bone, or stone. It is so mobile as to be quite free to take form from surroundings, and where extensively used will record or echo a vast deal of nature and of coexistent art.

In this observation we have a key that will unlock many of the mysteries of form.

In the investigation of this point it will be necessary to consider the processes by which an art inherits or acquires the forms of another art or of nature, and how one material imposes its peculiarities upon another material. In early stages of culture the processes of art are closely akin to those of nature, the human agent hardly ranking as more than

a part of the environment. The primitive artist does not proceed by methods identical with our own. He does not deliberately and freely examine all departments of nature or art and select for models those things most convenient or most agreeable to fancy; neither does he experiment with the view of inventing new forms. What he attempts depends almost absolutely upon what happens to be suggested by preceding forms, and so narrow and so direct are the processes of his mind that, knowing his resources, we could closely predict his results.

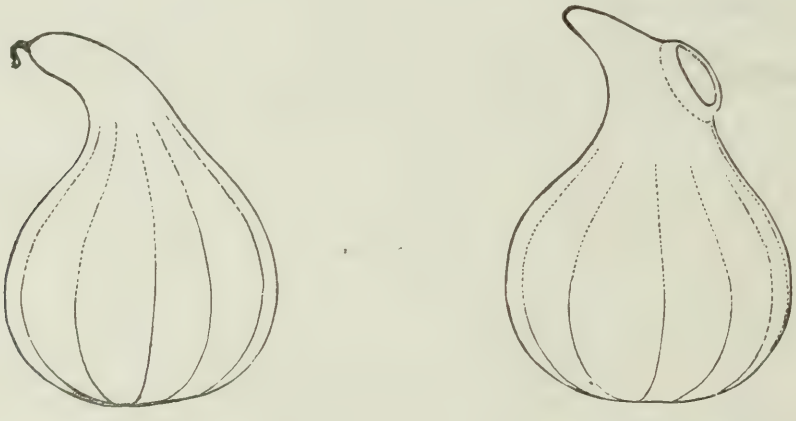
The range of models in the ceramic art is at first very limited, and includes only those utensils devoted to the particular use to which the clay vessels are to be applied; later, closely-associated objects and utensils are copied. In the first stages of art, when the savage makes a weapon, he modifies or copies a weapon; when he makes a vessel, he modifies or copies a vessel.

This law holds good in an inverse ratio to culture, varying to a certain extent with the character of the material used.

Natural originals.—Natural originals, both animal and vegetable, necessarily differ with the country and the climate, thus giving rise to individual characters in art forms often extremely persistent and surviving decided changes of environment.

The gourd is probably the most varied and suggestive natural vessel. We find that the primitive potter has often copied it in the most literal manner. One example only, out of the many available ones, is necessary. This is from a mound in southeastern Missouri.

In Fig. 464, *a* illustrates a common form of the gourd, while *b* represents the imitation in clay.



a, Gourd. *b*, Clay vessel.

FIG. 464.—Form derived from a gourd.

All nations situated upon the sea or upon large rivers use shells of mollusks, which, without modification, make excellent receptacles for water and food. Imitations of these are often found among the products of the potter's art. A good example from the Mississippi Valley is shown in Fig. 465, *a* being the original and *b* the copy in clay.

In Africa, and in other countries, such natural objects as cocoanut shells, and ostrich eggs are used in like manner.

Another class of vessels, those made from the skins, bladders, and stomachs of animals, should also be mentioned in this connection, as it is certain that their influence has frequently been felt in the conformation of earthen utensils.

In searching nature, therefore, for originals of primitive ceramic forms we have little need of going outside of objects that in their natural or slightly altered state are available for vessels.

a, Shell. *b*, Clay.

FIG. 465.—Form derived from a conch shell.

True, other objects have been copied. We find a multitude of the higher natural forms, both animal and vegetable, embodied in vessels of clay, but their presence is indicative of a somewhat advanced stage of art, when the copying of vessels that were functionally proper antecedents had given rise to a familiarity with the use of clay and a capacity in handling it that, with advancing culture, brought all nature within the reach of the potter and made it assist in the processes of variation and development.

Artificial originals.—There is no doubt that among most peoples art had produced vessels in other materials antecedent to the utilization of clay. These would be legitimate models for the potter and we may therefore expect to find them repeated in earthenware. In this way the art has acquired a multitude of new forms, some of which may be natural forms at second hand, that is to say, with modifications imposed upon them by the material in which they were first shaped. But all materials other than clay are exceedingly intractable, and impress their own characters so decidedly upon forms produced in them that ultimate originals, where there are such, cannot often be traced through them.

It will be most interesting to note the influence of these peculiarities of originals upon the ceramic art.

A nation having stone vessels, like those of California, on acquiring the art of pottery would use the stone vessels as models, and such forms as that given in Fig. 466 would arise, *a* being in stone and *b* in clay; the former from California and the latter from Arizona.

Similar forms would just as readily come from gourds, baskets, or other globular utensils.

Nations having wooden vessels would copy them in clay on acquiring the art of pottery. This would give rise to a distinct group of forms, the result primarily of the peculiarities of the woody structure.

Thus in Fig. 467, *a*, we have a form of wooden vessel, a sort of winged trough that I have frequently found copied in clay. The earthen vessel given in Fig. 467, *b*, was obtained from an ancient grave in Arkansas.

a, stone. *b*, clay.

FIG. 466.—Form derived from a stone pot.

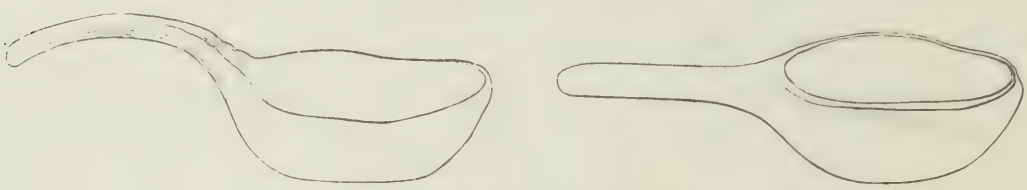
The carapace of some species of turtles, and perhaps even the hard case of the armadillo, could be utilized in a similar way.

The shaping of a knot of wood often gives rise to a dipper-shaped

a, wood. *b*, clay.

FIG. 467.—Form derived from a wooden tray.

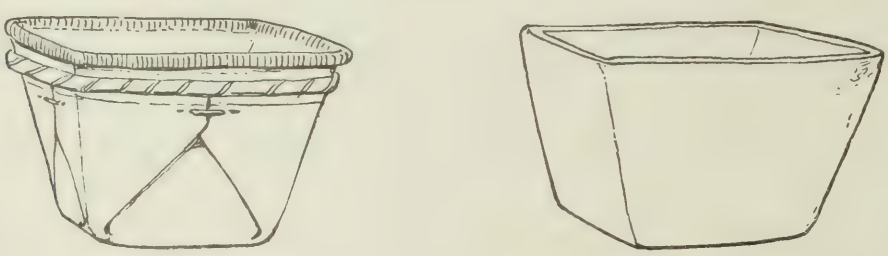
vessel, such as may be found in use by many tribes, and is as likely an original for the dipper form in clay as is the gourd or the conch shell; the familiar horn vessel of the western tribes, Fig. 468, *a*, would have



a, Horn. *b*, Clay.

FIG. 468.—Form derived from a horn spoon.

served equally well. The specimen given in *b* is from Arkansas. As a rule, however, such vessels cannot be traced to their originals, since



a, Bark. *b*, Clay.

FIG. 469.—Form derived from a bark vessel.

by copying and recopying they have varied from the parent form, tending always toward uniform conventional shapes.

A vessel of rectangular outline might originate in wood or bark. In Fig. 469, *a*, we have a usual form of bark tray, which is possibly the prototype of the square-rimmed earthen vessel given in *b*.

Basketry and other classes of woven vessels take a great variety of forms and, being generally antecedent to the potter's art and con-

a, Wicker. *b*, Clay.

FIG. 470.—Form originating in basketry.

stantly present with it, have left an indelible impression upon ceramic forms. This is traceable in the earthenware of nearly all nations. The clay vessel is an intruder, and usurps the place and appropriates the

a, Wicker. *b*, Clay.

FIG. 471.—Form originating in basketry.

dress of its predecessor in wicker. The form illustrated in Fig. 470, *a*, is a common one with the Pueblo peoples, and their earthen vessels often resemble it very closely, as shown in *b*. Another variety is given

a, Net. *b*, Clay.

FIG. 472.—Form originating in basketry

in Fig. 471, *a* and *b*. These specimens are from southwestern Utah. Fig. 472, *b*, illustrates a form quite common in the Southern States, a

section in which pouch-like nets and baskets, *a*, were formerly in use and in which the pots were often modeled.

INVENTION OF FORM.

In the early stages of art, forms are rarely invented outright and I shall not stop to consider the subject here.

MODIFICATION OF FORM.

The acquisition of new materials, the development of new uses, the employment of new processes of manufacture, and many other agencies lead to the multiplication of forms through modification. The processes by which highly differentiated forms are reached are interesting throughout and repay the closest study.

A preliminary classification of the various causes that lead to modification is given in the following synopsis:

- Modification of form
  - By adventition
    - Incapacity of material
      - To assume form.
      - To retain form.
    - Incapacity of the artisan.
    - Changes in method of manufacture.
    - Changes of environment.
    - Changes of use.
    - Lack of use.
    - Influence of new or exotic forms, etc.
  - By intention
    - To enhance usefulness.
    - To please fancy
      - For the beautiful.
      - For the grotesque.

MODIFICATION BY ADVENTITION.

Incapacity of material.—It is evident at a glance that clay lacks the capacity to assume and to retain many of the details of form found in antecedent vessels. This necessarily results in the alteration or omission of these features, and hence arise many modifications of original forms.

The simple lack of capacity on the part of the potter who undertook to reproduce a model would lead to the modification of all but the most simple shapes.

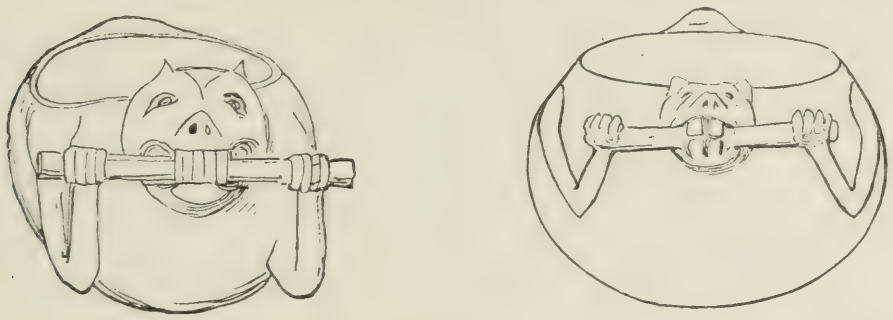
The acquisition of the art by a superior or an inferior race, or one of different habits would lead to decided changes. A people accustomed to carrying objects upon the head, on acquiring earthen vessels would shape the bases and the handles to facilitate this use.

Improvements in the methods of manufacture are of the greatest importance in the progress of an art. The introduction of the lathe, for example, might almost revolutionize form in clay.

As arts multiply, clay is applied to new uses. Its employment in the manufacture of lamps, whistles, or toys would lead to a multitude of distinct and unique forms.

The acquisition of a new vessel-making material by a nation of potters and the association of the forms developed through its inherent qualities or structure would often lead ceramic shapes into new channels.

The contact of a nation of potters with a nation of carvers in wood would tend very decidedly to modify the utensils of the former. One example may be given which will illustrate the possibilities of such exotic influences upon form. In Fig. 473, *a*, we have an Alaskan vessel

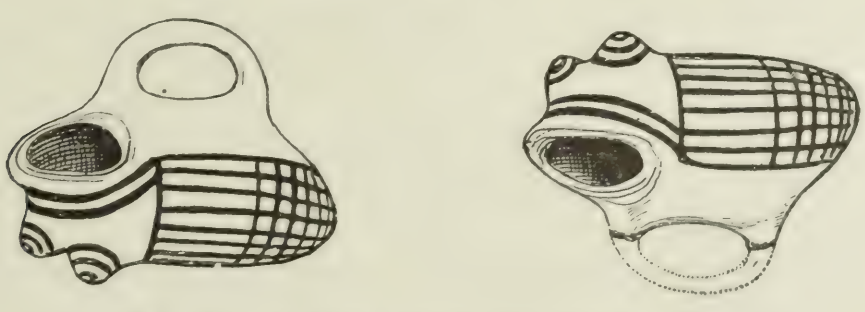


a, wood. *b*, clay.

FIG. 473.—Coincident forms.

carved in wood. It represents a beaver grasping a stick in its hands and teeth. The conception is so unusual and the style of vessel so characteristic of the people that we should not expect to find it repeated in other regions; but the ancient graves of the Middle Mississippi Valley have furnished a number of very similar vessels in clay, one of which is outlined in *b*. While this remarkable coincidence is suggestive of ethnic relationships which do not call for attention here, it serves to illustrate the possibilities of modification by simple contact.

A curious example illustrative of possible transformation by adventitious circumstances is found in the collection from the province of ancient Tusayan. A small vessel of sphynx-like appearance, possibly derived more or less remotely from a skin vessel, has a noticeable resemblance to some life form, Fig. 474, *a*. The fore-legs are represented



a *b*

FIG. 474.—Form resulting from accident.

by two large bosses, the wide-open mouth takes the place of the severed neck, and a handle connects the top of the rim with the back of the vessel. The handle being broken off and the vessel inverted,

b, there is a decided change; we are struck by the resemblance to a frog or toad. The original legs, having dark concentric lines painted around them, look like large protruding eyes, and the mouth gapes in the most realistic manner, while the two short broken ends of the handle resemble legs and serve to support the vessel in an upright position, completing the illusion. The fetich-hunting Pueblo Indian, picking up this little vessel in its mutilated condition, would probably at once give to it the sacred character of the water animal which it resembles, and it might readily transmit its peculiarities of form to other generations of vessels.

It is not necessary in this study to refer at length to the influence of metallic vessels upon ceramic forms. They do not usually appear until the ceramic art is far advanced and often receive a heritage of shape from earthen forms. Afterwards, when the inherent qualities of the metal have stamped their individuality upon utensils, the debt is paid back to clay with interest, as will be seen by reference to later forms in many parts of the world.

MODIFICATION BY INTENTION.

To enhance usefulness.—There can be no doubt that the desire upon the part of the archaic potter to increase the usefulness and convenience of his utensils has been an important agent in the modification of form. The earliest vessels employed were often clumsy and difficult to handle. The favorite conch shell would hold water for him who wished to drink, but the breaking away of spines and the extraction of the interior whorl improved it immeasurably. The clumsy mortar of stone, with its thick walls and great weight, served a useful purpose, but it needed a very little intelligent thought to show that thin walls and neatly-trimmed margins were much preferable.

Vessels of clay, aside from the forms imposed upon them by their antecedents and associates, would necessarily be subject to changes suggested by the growing needs of man. These would be worked out with ever-increasing ease by his unfolding genius for invention. Further investigation of this phase of development would carry me beyond the limits set for this paper.

To please fancy.—The skill acquired by the handling of clay in constructing vessels and in efforts to increase their usefulness would open an expansive field for the play of fancy. The potter would no sooner succeed in copying vessels having life form than he would be placed in a position to realize his capacity to imitate forms not peculiar to vessels. His ambition would in time lead him even beyond the limits of nature and he would invade the realm of imagination, embodying the conceptions of superstition in the plastic clay. This tendency would be encouraged and perpetuated by the relegation of vessels of particular forms to particular ceremonies.

ORIGIN OF ORNAMENT.

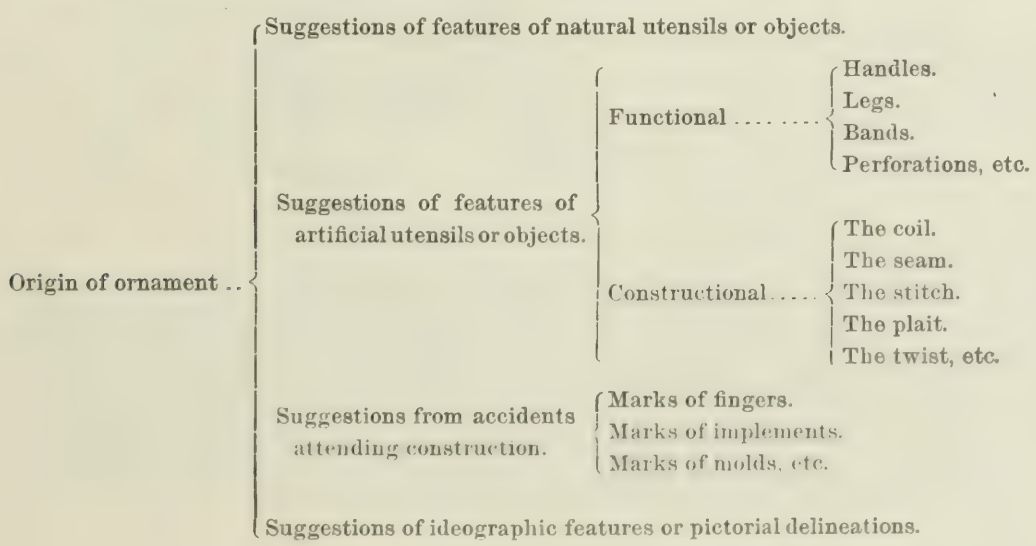
The birth of the embellishing art must be sought in that stage of animal development when instinct began to discover that certain attributes or adornments increased attractiveness. When art in its human sense came into existence ideas of embellishment soon extended from the *person*, with which they had been associated, to all things with which man had to deal. The processes of the growth of the æsthetic idea are long and obscure and cannot be taken up in this place.

The various elements of embellishment in which the ceramic art is interested may be assigned to two great classes, based upon the character of the conceptions associated with them. These are *ideographic* and *non-ideographic*. In the present paper I shall treat chiefly of the non ideographic, reserving the ideographic for a second paper.

Elements, non-ideographic from the start, are derived mainly from two sources: 1st, from objects, natural or artificial, associated with the arts; and, 2d, from the suggestions of accidents attending construction. Natural objects abound in features highly suggestive of embellishment and these are constantly employed in art. Artificial objects have two classes of features capable of giving rise to ornament: these are *constructional* and *functional*. In a late stage of development all things in nature and in art, however complex or foreign to the art in its practice, are subject to decorative treatment. This latter is the realistic pictorial stage, one of which the student of native American culture needs to take little cognizance.

Elements of design are not invented outright: man modifies, combines, and recombines elements or ideas already in existence, but does not create.

A classification of the sources of decorative motives employed in the ceramic art is given in the following diagram:

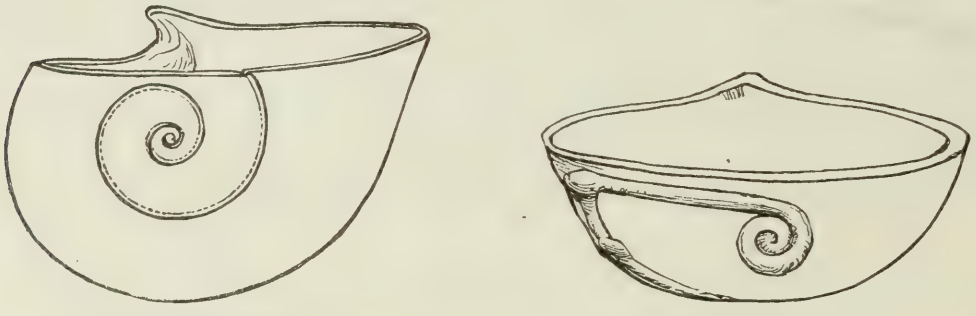


SUGGESTIONS OF NATURAL FEATURES OF OBJECTS.

The first articles used by men in their simple arts have in many cases possessed features suggestive of decoration. Shells of mollusks are exquisitely embellished with ribs, spines, nodes, and colors. The same is true to a somewhat limited extent of the shells of the turtle and the armadillo and of the hard cases of fruits.

These decorative features, though not essential to the utensil, are nevertheless inseparable parts of it, and are cast or unconsciously copied by a very primitive people when similar articles are artificially produced in plastic material. In this way a utensil may acquire ornamental characters long before the workman has learned to take pleasure in such details or has conceived an idea beyond that of simple utility. This may be called unconscious embellishment. In this fortuitous fashion a ribbed variety of fruit shell would give rise to a ribbed vessel in clay; one covered with spines would suggest a noded vessel, etc. When taste came to be exercised upon such objects these features would be retained and copied for the pleasure they afforded.

Passing by the many simple elements of decoration that by this unconscious process could be derived from such sources, let me give a single example by which it will be seen that not only elementary forms but even so highly constituted an ornament as the scroll may have been brought thus naturally into the realm of decorative art. The sea-shell has always been intimately associated with the arts that utilize clay and abounds in suggestions of embellishment. The *Busycon* was almost universally employed as a vessel by the tribes of the Atlantic drainage of North America. Usually it was trimmed down and excavated until



a.—Shell vessel. *b*.—Copy in clay.

FIG. 475.—Scroll derived from the spire of a conch shell.

only about three-fourths of the outer wall of the shell remained. At one end was the long spike-like base which served as a handle, and at the other the flat conical apex, with its very pronounced spiral line or ridge expanding from the center to the circumference, as seen in Fig. 475 *a*. This vessel was often copied in clay, as many good examples now in our museums testify. The notable feature is that the shell has

been copied literally, the spiral appearing in its proper place. A specimen is illustrated in Fig. 475 *b* which, although simple and highly conventionalized, still retains the spiral figure.

In another example we have four of the noded apexes placed about the rim of the vessel, as shown in Fig. 476*a*, the conception being that of four conch shells united in one vessel, the bases being turned inward and the apexes outward. Now it is only necessary to suppose the addition of the spiral lines, always associated with the nodes, to have the result shown in *b*, and by a still higher degree of convention we have

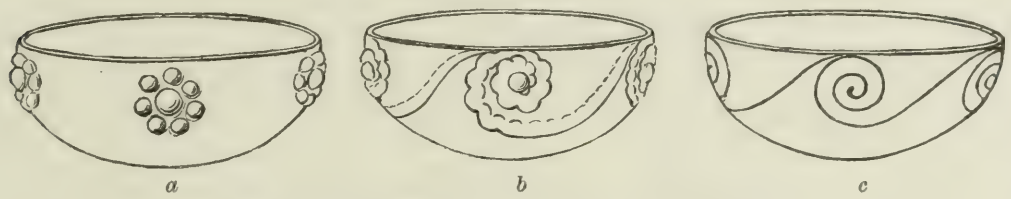


FIG. 476.—Possible derivation of the current scroll.

the classic scroll ornament given in *c*. Of course, no such result as this could come about adventitiously, as successful combination calls for the exercise of judgment and taste; but the initiatory steps could be taken—the motive could enter art—without the conscious supervision of the human agent.

SUGGESTIONS BY FEATURES OF ARTIFICIAL OBJECTS.

Functional features.—Functional features of art products liable to influence ornament comprise handles, legs, feet, rims, bands, and other peculiarities of shape originating in utility. Handles, for instance, may have been indigenous to a number of arts; they are coeval and coextensive with culture. The first load, weapon, or vessel transported by man may have been suspended by a vine or filament. Such arts as have fallen heir to handles have used them according to the capacities of the material employed. Of all the materials stone is probably the least suited to their successful use, while clay utilizes them in its own peculiar

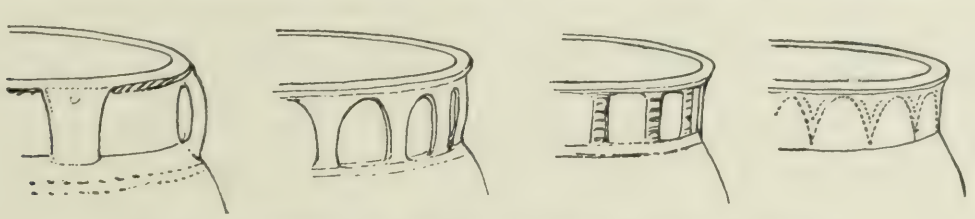


FIG. 477.—Ornament derived through the modification of handles.

way, giving to them a great variety of expression. They are copied in clay from various models, but owing to the inadequate capacities of the material, often lose their function and degenerate into mere ornaments, which are modified as such to please the potter's fancy. Thus, for example, the series of handles placed about the neck of the vessel become,

by modification in frequent copying, a mere band of ornamental figures in relief, or even finally in engraved, punctured, or painted lines, in the manner suggested in Fig. 477. Legs, pedestals, spouts, and other features may in a like manner give rise to decoration.

Constructional features.—Features of vessels resulting from construction are infinitely varied and often highly suggestive of decoration. Constructional peculiarities of the clay utensils themselves are especially worthy of notice, and on account of their actual presence in the art itself are more likely to be utilized or copied for ceramic ornament than those of other materials. The coil, so universally employed in construction, has had a decided influence upon the ceramic decoration of certain peoples, as I have shown in a paper on ancient Pueblo art. From it we have not only a great variety of surface ornamentation produced by simple treatment of the coil in place, but probably many forms suggested by the use of the coil in vessel building, as, for instance, the spiral formed in beginning the base of a coiled vessel, Fig. 478 *a*,

a.—Coiled fillet of clay. *b*.—Double coil.

FIG. 478.—Scroll derived from coil of clay.

from which the double scroll *b*, as a separate feature, could readily be derived, and finally the chain of scrolls so often seen in border and zone decoration. This familiarity with the use of fillets or ropes of clay would also lead to a great variety of applied ornament, examples of which, from Pueblo art, are given in Fig. 479. The sinuous forms as-

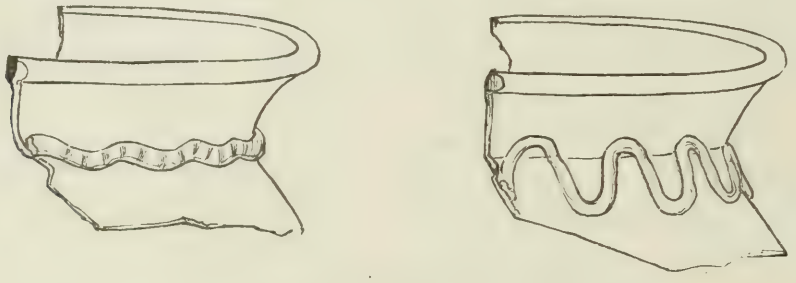


FIG. 479.—Ornamental use of fillets.

sumed by a rope of clay so employed would readily suggest to the Indian the form of the serpent and the means of representing it, and might thus lead to the introduction of this much revered creature into art.

Of the various classes of utensils associated closely with the ceramic art, there are none so characteristically marked by constructional feat-

ures as nets and wicker baskets. The twisting, interlacing, knotting, and stitching of filaments give relieved figures that by contact in manufacture impress themselves upon the plastic clay. Such impressions come in time to be regarded as pleasing features, and when free-hand methods of reproducing are finally acquired they and their derivatives become essentials of decoration. At a later stage these characters of basketry influence ceramic decoration in a somewhat different way. By the use of variously-colored fillets the woven surface displays figures in color corresponding to those in relief and varying with every new combination. Many striking patterns are thus produced, and the potter who has learned to decorate his wares by the stylus or brush reproduces these patterns by free-hand methods. We find pottery in all countries ornamented with patterns, painted, incised, stamped, and relieved, certainly derived from this source. So well is this fact known that I need hardly go into details.

In the higher stages of art the constructional characters of architecture give rise to many notions of decoration which afterwards descend to other arts, taking greatly divergent forms. Aboriginal architecture in some parts of America had reached a development capable of wielding a strong influence. This is not true, however, of any part of the United States.

SUGGESTIONS OF ACCIDENTS.

Besides the suggestions of surface features impressed in manufacture or intentionally copied as indicated above, we have also those of accidental imprints of implements or of the fingers in manufacture. From this source there are necessarily many suggestions of ornament, at first of indented figures, but later, after long employment, extending to the other modes of representation.

IDEOGRAPHIC AND PICTORIAL SUBJECTS.

Non-ideographic forms of ornament may originate in ideographic features, mnemonic, demonstrative, or symbolic. Such significant figures are borrowed by decorators from other branches of art. As time goes on they lose their significance and are subsequently treated as purely decorative elements. Subjects wholly pictorial in character, when such come to be made, may also be used as simple decoration, and by long processes of convention become geometric.

The exact amount of significance still attached to significant figures after adoption into decoration cannot be determined except in cases of actual identification by living peoples, and even when the signification is known by the more learned individuals the decorator may be wholly without knowledge of it.

MODIFICATION OF ORNAMENT.

There are comparatively few elementary ideas prominently and generally employed in primitive decorative art. New ideas are acquired, as already shown, all along the pathway of progress. None of these ideas retain a uniform expression, however, as they are subject to modification by environment just as are the forms of living organisms. A brief classification of the causes of modification is given in the following synopsis:

Modification of ornament { Through material. / Through form. / Through methods of realization.

Through material.—It is evident at a glance that *material* must have a strong influence upon the forms assumed by the various decorative motives, however derived. Thus stone, clay, wood, bone, and copper, although they readily borrow from nature and from each other, necessarily show different decorative results. Stone is massive and takes form slowly and by peculiar processes. Clay is more versatile and decoration may be scratched, incised, painted, or modeled in relief with equal facility, while wood and metal engender details having characters peculiar to themselves, producing different results from the same motives or elements. Much of the diversity displayed by the art products of different countries and climates is due to this cause.

Peoples dwelling in arctic climates are limited, by their materials, to particular modes of expression. Bone and ivory as shaped for use in the arts of subsistence afford facilities for the employment of a very restricted class of linear decoration, such chiefly as could be scratched with a hard point upon small irregular, often cylindrical, implements. Skins and other animal tissues are not favorable to the development of ornament, and the textile arts—the greatest agents of convention—do not readily find suitable materials in which to work.

Decorative art carried to a high stage under arctic environment would be more likely to achieve unconventional and realistic forms than if developed in more highly favored countries. The accurate geometric and linear patterns would hardly arise.

Through form.—Forms of decorated objects exercise a strong influence upon the decorative designs employed. It would be more difficult to tattoo the human face or body with straight lines or rectilinear patterns than with curved ones. An ornament applied originally to a vessel of a given form would accommodate itself to that form pretty much as costume becomes adjusted to the individual. When it came to be required for another form of vessel, very decided changes might be necessary.

With the ancient Pueblo peoples rectilinear forms of meander patterns were very much in favor and many earthen vessels are found in

which bands of beautiful angular geometric figures occupy the peripheral zone, Fig. 480 *a*, but when the artist takes up a mug having a row of hemispherical nodes about the body, *b*, he finds it very difficult to apply his favorite forms and is almost compelled to run spiral curves about the nodes in order to secure a neat adjustment.

a *b*

FIG. 480.—Variations in a motive through the influence of form.

Through methods of realization.—It will readily be seen that the forms assumed by a motive depend greatly upon the character of the mechanical devices employed. In the potter's art devices for holding and turning the vessel under manipulation produce peculiar results.

In applying a given idea to clay much depends upon the method of executing it. It will take widely differing forms when executed by incising, by modeling, by painting, and by stamping.

Intimately associated with methods of execution are peculiarities of construction, the two agencies working together in the processes of modification and development of ornament.

I have previously shown how our favorite ornament, the scroll, in its disconnected form may have originated in the copying of natural forms or through the manipulation of coils of clay. I present here an example of its possible origin through the modification of forms derived from constructional features of basketry. An ornament known as the guilloche is found in many countries. The combination of lines resembles that of twisted or platted fillets of wood, cane, or rushes, as may be seen at a glance, Fig. 481 *a*. An incised ornament of this character, possibly derived from basketry by copying the twisted fillets or their impressions in the clay, is very common on the pottery of the mounds of the Mississippi Valley, and its variants form a most interesting study. In applying this to a vessel the careless artist does not properly connect the ends of the lines which pass beneath the intersecting fillets, and the parts become disconnected, *b*. In many cases the ends are turned in abruptly as seen in *c*, and only a slight further change is necessary to lead to the result, *d*, the running scroll with well-developed links. All of these steps may be observed in a single group of vessels.

It may be thought by some that the processes of development indicated above are insufficient and unsatisfactory. There are those who,

seeing these forms already endowed with symbolism, begin at what I conceive to be the wrong end of the process. They derive the form of symbol directly from the thing symbolized. Thus the current scroll is, with many races, found to be a symbol of water, and its origin is attributed to a literal rendition of the sweep and curl of the waves. It is more probable that the scroll became the symbol of the sea long after its development through agencies similar to those described above, and that the association resulted from the observation of incidental resemblances. This same figure, in use by the Indians of the interior of the continent, is regarded as symbolic of the whirlwind, and it is probable that any symbol-using people will find in the features and phenomena of their environment, whatever it may be, sufficient resemblance to any of their decorative devices to lead to a symbolic association.

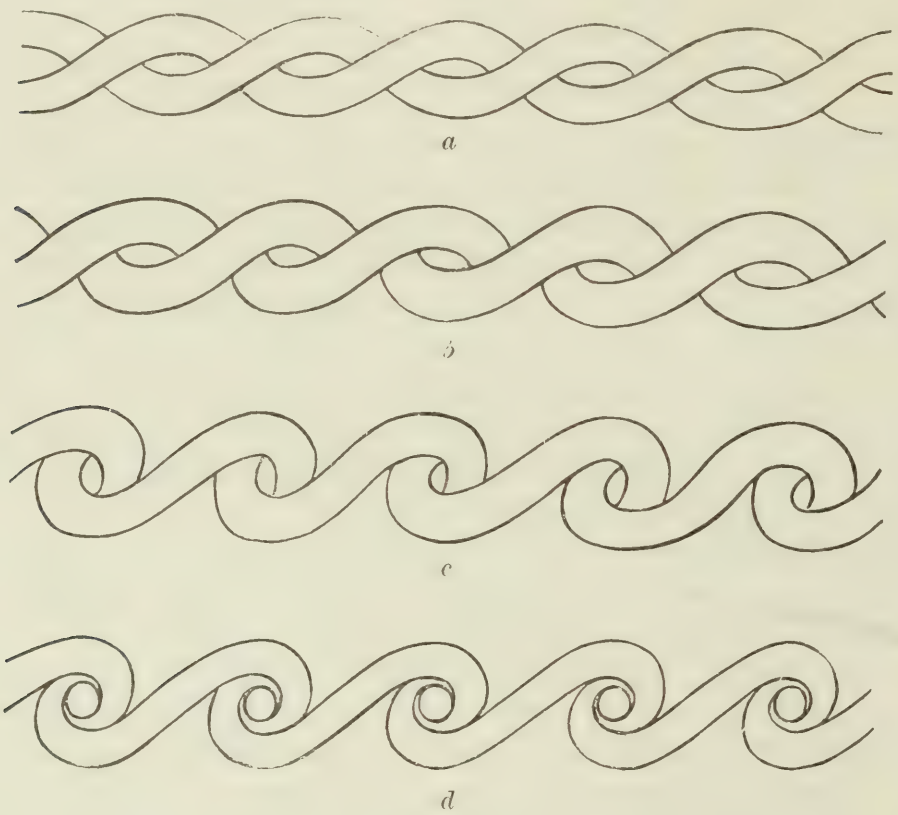
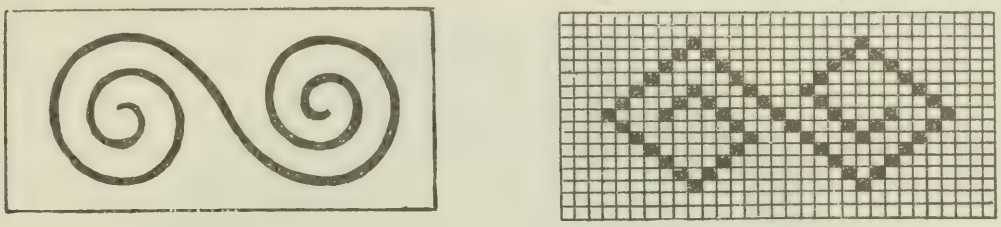


FIG. 481.—Theoretical development of the current scroll.

One secret of modification is found in the use of a radical in more than one art, owing to differences in constructional characters. For example, the tendency of nearly all woven fabrics is to encourage, even to compel, the use of straight lines in the decorative designs applied. Thus the attempt to employ curved lines would lead to stepped or broken lines. The curvilinear scroll coming from some other art would be forced by the constructional character of the fabric into square forms, and the rectilinear meander or fret would result, as shown in Fig. 482, *a* being the plain form, painted, engraved, or in relief, and *b* the same idea developed in a woven fabric. Stone or brick-work would lead to like results, Fig. 483; but the modification could as readily move in the

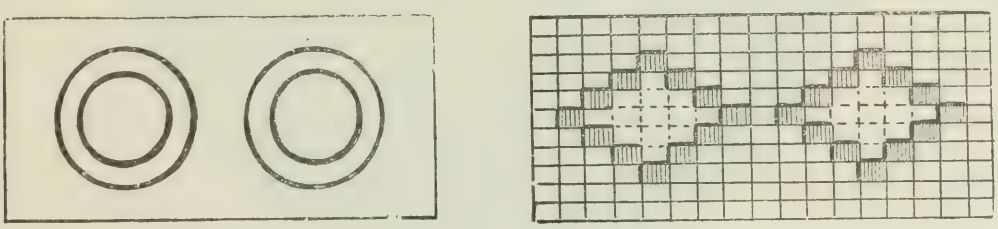
other direction. If an ornament originating in the constructional character of a woven fabric, or remodeled by it, and hence rectilinear, should be desired for a smooth structureless or featureless surface, the difficul-



a, free-hand form. *b*, form imposed by fabric.

FIG. 482.—Forms of the same motive expressed in different arts.

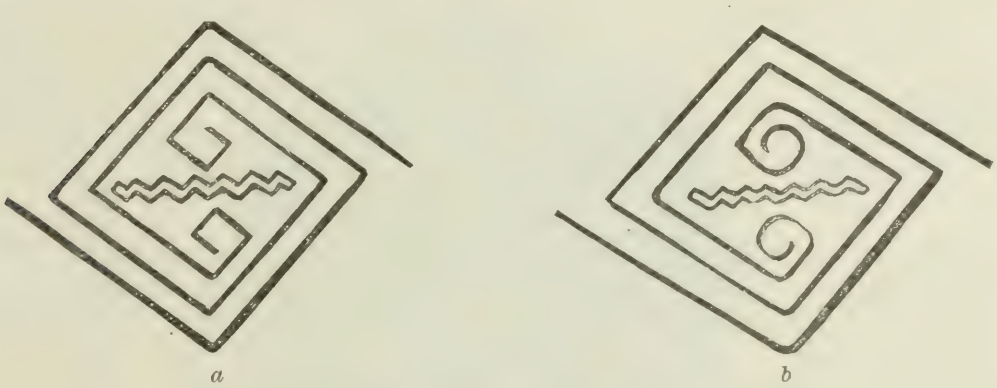
ties of drawing the angular forms would lead to the delineation of curved forms, and we would have exactly the reverse of the order shown in Figs. 482 and 483. The two forms given in Fig. 484 actually



a, free-hand form. *b*, form imposed by masonry.

FIG. 483.—Forms of the same motive expressed in different arts.

occur in one and the same design painted upon an ancient Pueblo vase. The curved form is apparently the result of careless or hurried work, the original angular form having come from a textile source.



a *b*

FIG. 484.—Variations resulting from change of method.

Many excellent examples illustrative of this tendency to modification are found in Pueblo art. Much of the ornament applied to pottery is derived from the sister art, basketry. In the latter art the forms of decorative figures are geometric and symmetrical to the highest degree, as I have frequently pointed out. The rays of a radiating ornament, worked with the texture of a shallow basket, spring from the center and take uniform directions toward the margin, as shown in Fig. 485. But

when a similar idea derived from basketry (as it could have no other origin) is executed in color upon an earthen vessel, we observe a tendency to depart from symmetry as well as from consistency. I call atten-

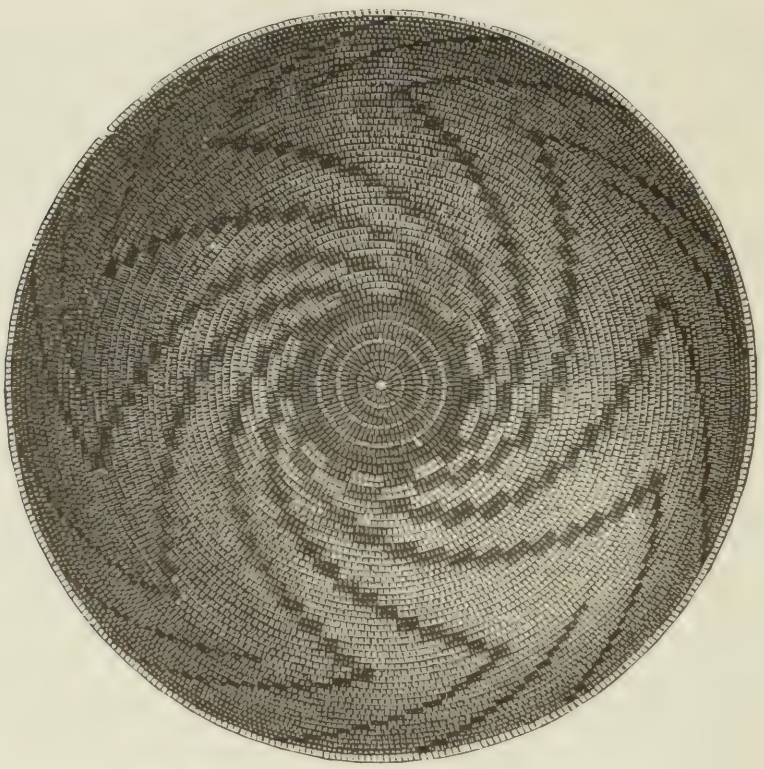


FIG. 485.—Geometric form of textile ornament.

tion here to the *arrangement* of the *parts* merely, not to the motives employed, as I happen to have no examples of identical figures from the two arts.

FIG. 486.—Loss of geometric accuracy in painting.

It will be seen by reference to the design given in Fig. 486, taken from the upper surface of an ancient vase, that although the spirit of the decoration is wonderfully well preserved the idea of the origin of all the rays in the center of the vessel is not kept in view, and that by

carelessness in the drawing two of the rays are crowded out and terminate against the side of a neighboring ray. In copying and recopying by free-hand methods, many curious modifications take place in these designs, as, for example, the unconformity which occurs in one place in the example given may occur at a number of places, and there will be a series of independent sections, a small number only of the bands of devices remaining true rays.

A characteristic painted design from the interior of an ancient bowl is shown in Fig. 487, in which merely a suggestion of the radiation is preserved, although the figure is still decorative and tasteful. This process of modification goes on without end, and as the true geometric

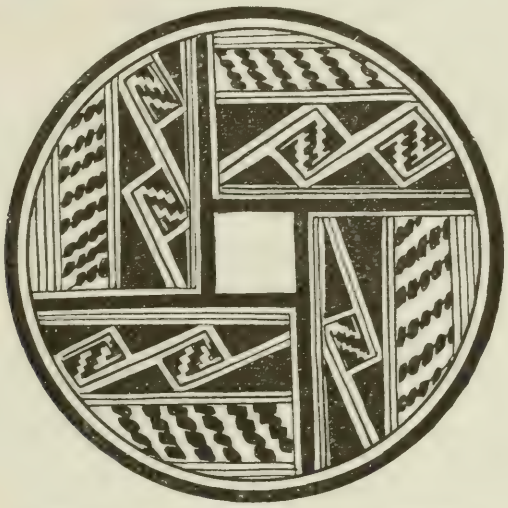


FIG. 487.—Design painted upon pottery.

textile forms recede from view innovation robs the design of all traces of its original character, producing much that is incongruous and unsatisfactory.

The growth of decorative devices from the elementary to the highly constituted and elegant is owing to a tendency of the human mind to elaborate because it is pleasant to do so or because pleasure is taken in the result, but there is still a directing and shaping agency to be accounted for.

I have already shown that such figures as the scroll and the guilloche are not *necessarily* developed by processes of selection and combination of simple elements, as many have thought, since they may have come into art at a very early stage almost full-fledged; but there is nothing in these facts to throw light upon the processes by which ornament followed particular lines of development throughout endless elaboration. In treating of this point, Prof. C. F. Hartt[2] maintained that the development of ornamental designs took particular and uniform directions owing to the structure of the eye, certain forms being chosen and perpetuated because of the pleasure afforded by movements of the eye in following them. In connection with this hypothesis, for it is nothing more, Mr. Hartt advanced the additional idea, that in unison with

[2] Hartt: Popular Science Monthly, Vol. VI, p. 266.

the general course of nature decorative forms began with simple elements and developed by systematic methods to complex forms. Take for example the series of designs shown in Fig. 488. The meander *a* made up of simple parts would, according to Mr. Hartt, by further elaboration under the supervision of the muscles of the eye, develop into *b*. This, in time, into *c*, and so on until the elegant anthemium was achieved. The series shown in Fig. 489 would develop in a similar way, or otherwise would be produced by modification in free-hand copying of the rectilinear

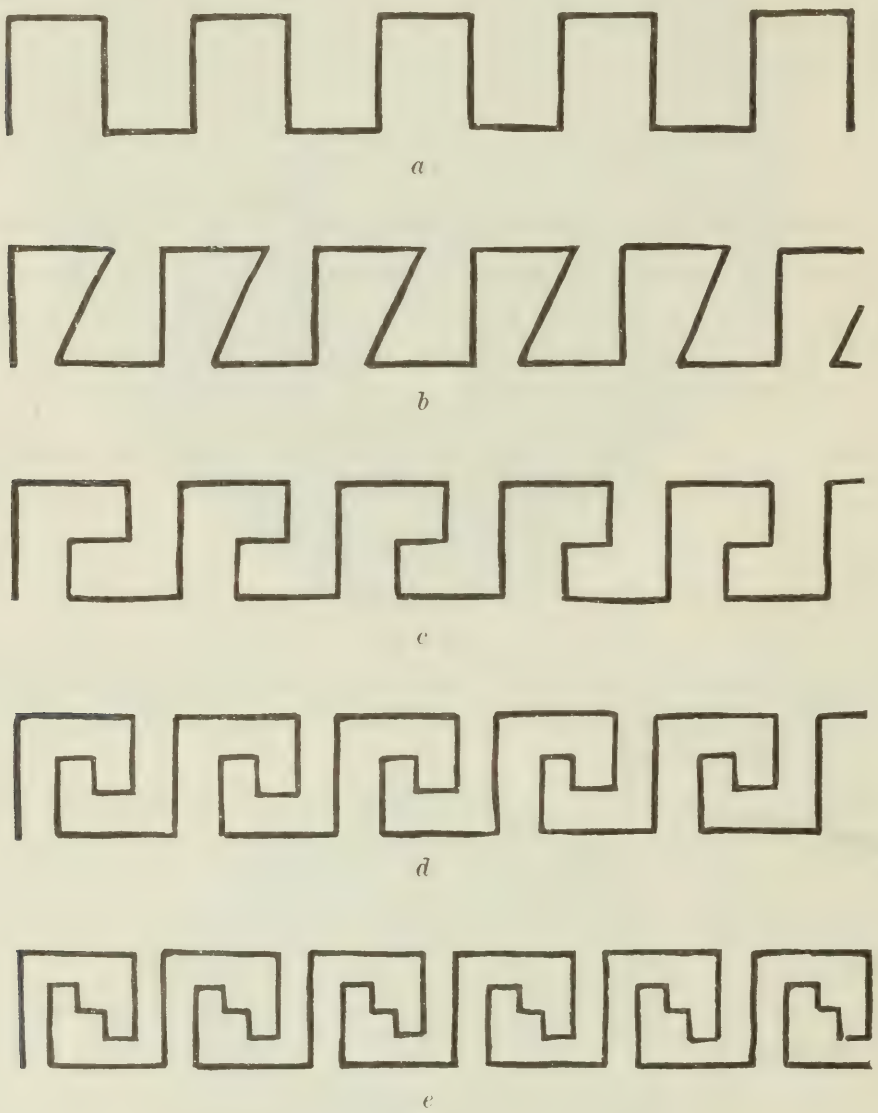


FIG. 488.—Theoretical development of fret work.

series. The processes here suggested, although to all appearances reasonable enough, should not be passed over without careful scrutiny.

Taking the first series, we observe that the ornaments are projected in straight continuous lines or zones, which are filled in with more or less complex parts, rectilinear and geometrically accurate. Still higher forms are marvelously intricate and graceful, yet not less geometric and symmetrical.

Let us turn to the primitive artisan, and observe him at work with rude brush and stylus upon the rounded and irregular forms of his

utensils and weapons, or upon skins, bark, and rock surfaces. Is it probable that with his free hand directed by the eye alone he will be able to achieve these rythmic geometric forms. It seems to me that the whole tendency is in the opposite direction. I venture to surmise that if there had been no other resources than those named above the typical rectilinear fret would never have been known, at least to the primitive world; for, notwithstanding the contrary statement by Professor Hartt, the fret is in its more highly-developed forms extremely

FIG. 489.—Theoretical development of scroll work.

difficult to follow with the eye and to delineate with the hand. Until arts, geometric in their construction, arose to create and to combine mechanically the necessary elements and motives, and lead the way by a long series of object-lessons to ideas of geometric combination, our typical border ornament would not be possible. Such arts are the textile arts and architecture. These brought into existence forms and ideas not met with in nature and not primarily thought of by man, and combined them in defiance of human conceptions of grace. Geometric ornament is the offspring of technique.

SMITHSONIAN INSTITUTION——BUREAU OF ETHNOLOGY.

A STUDY

OF

PUEBLO POTTERY

AS ILLUSTRATIVE OF

ZUÑI CULTURE-GROWTH.

BY

FRANK HAMILTON CUSHING.

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A STUDY OF PUEBLO POTTERY AS ILLUSTRATIVE OF ZUÑI CULTURE-GROWTH.

By Frank H. Cushing.

HABITATIONS AFFECTED BY ENVIRONMENT.

It is conceded that the peculiarities of a culture-status are due chiefly to the necessities encountered during its development. In this sense the Pueblo phase of life was, like the Egyptian, the product of a desert environment. Given that a tribe or stock of people is weak, they will be encroached upon by neighboring stronger tribes, and driven to new surroundings if not subdued. Such we may believe was the influence which led the ancestors of the Pueblo tribes to adopt an almost waterless area for their habitat.

It is apparent at least that they entered the country wherein their remains occur while comparatively a rude people, and worked out there almost wholly their incipient civilization. Of this there is important linguistic evidence.

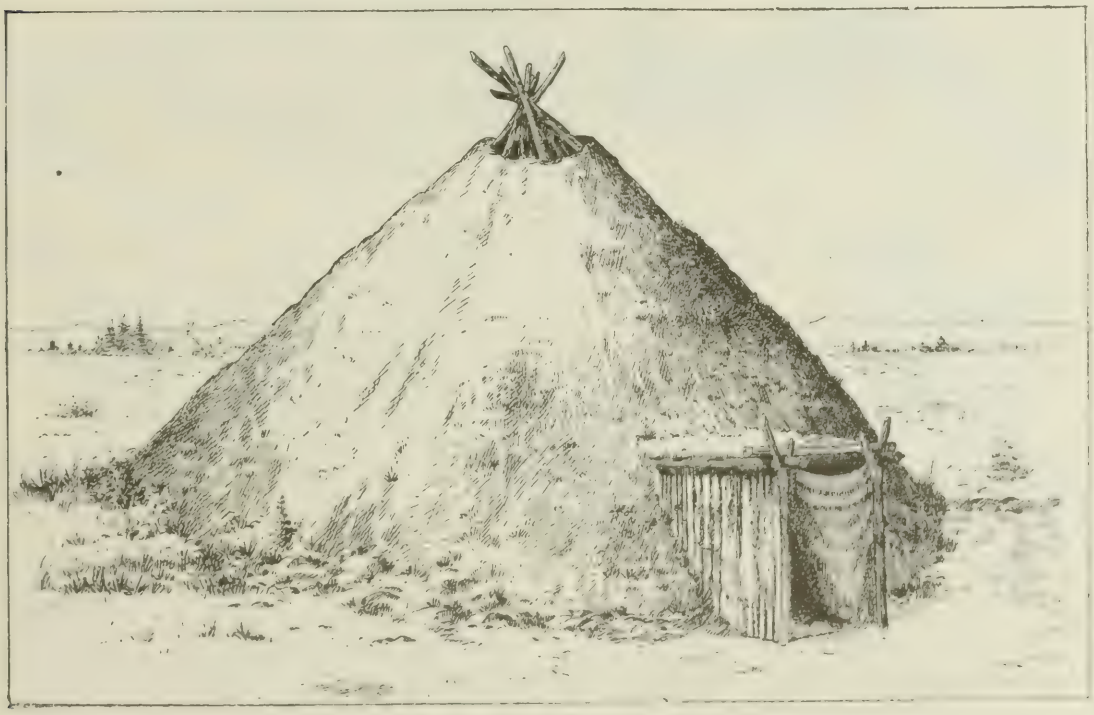


Fig. 490.—A Navajo hut.

A Navajo hogan, or hut, is a beehive-shaped or conical structure (see Fig. 490) of sticks and turf or earth, sometimes even of stones

chinked with mud. Yet its modern Zuñi name is *hám' pon ne*, from *ha we*, dried brush, sprigs or leaves; and *pó an ne*, covering, shelter or roof (*po a* to place over and *ne* the nominal suffix); which, interpreted, signifies a "brush or leaf shelter." This leads to the inference that the temporary shelter with which the Zuñis were acquainted when they formulated the name here given, presumably in their earliest condition, was in *shape* like the Navajo hogan, but in *material*, of brush or like perishable substance.

The archaic name for a building or walled inclosure is *hé sho ta*, a contraction of the now obsolete term, *hé sho ta pon ne*, from *hé sho*, gum, or resin-like; *shó tai e*, leaned or placed together convergingly; and *tá po an ne*, a roof of wood or a roof supported by wood.

The meaning of all this would be obscure did not the oldest remains of the Pueblos occur in the almost inaccessible lava-wastes bordering the southwestern deserts and intersecting them and were not the houses of these ruins built on the plan of shelters, round (see Figs. 491, 492, 493),

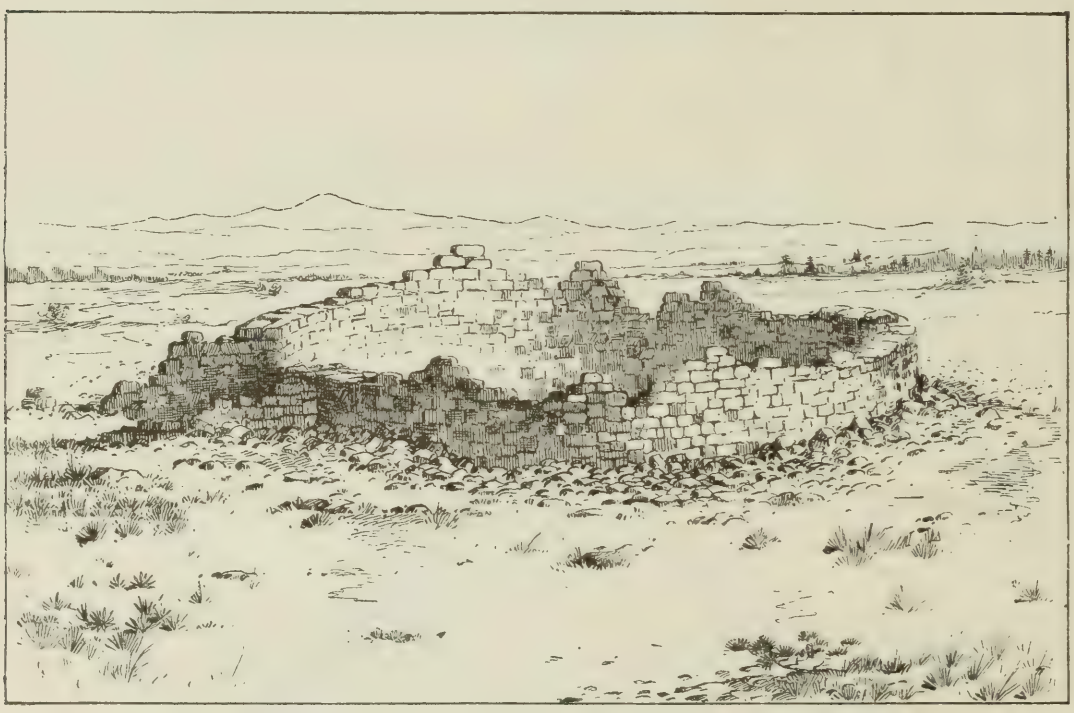


FIG. 491.—Perspective view of earliest or Round-house structure of lava.

rather than rectangular. Furthermore, not only does the lava-rock of which their walls have been rudely constructed resemble natural asphaltum (*hé sho*) and possess a cleavage exactly like that of piñon-gum and allied substances (also *hé sho*), but some forms of lava are actually known as *á he sho* or gum-rock. From these considerations inferring that the name *hé sho ta pon ne* derivatively signifies something like "a gum-rock shelter with roof supports of wood," we may also infer that the Pueblos on their coming into the desert regions dispossessed earlier inhabitants or that they chose the lava-wastes the better to secure

themselves from invasion; moreover that the oldest form of building known to them was therefore an inclosure of lava-stones, whence the application of the contraction *hé sho ta* and its restriction to mean a walled inclosure.

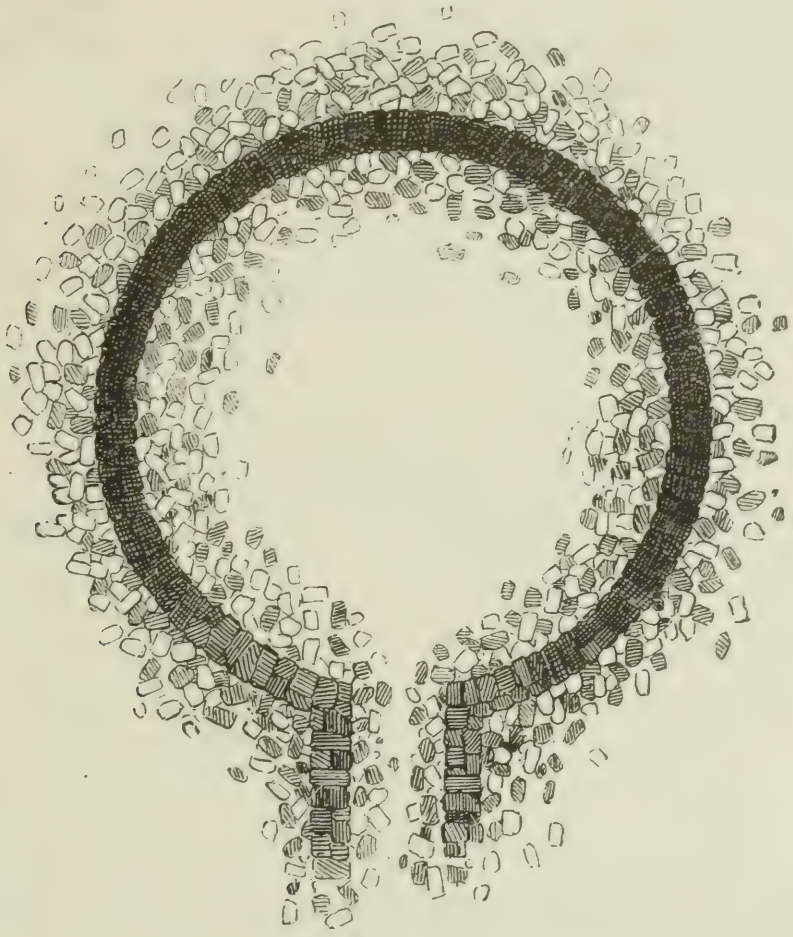


FIG. 492.—Plan of Pueblo structure of lava.

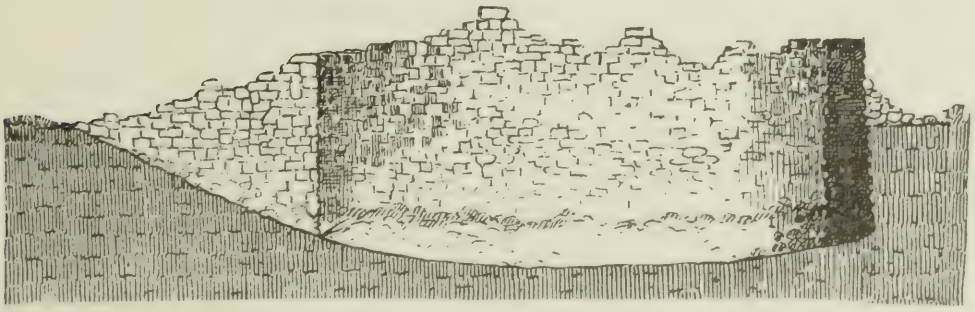


FIG. 493.—Section of Pueblo structure of lava.

RECTANGULAR FORMS DEVELOPED FROM CIRCULAR.

It may be well in this connection to cite a theory entertained by Mr. Victor Mindeleff, of the Bureau of Ethnology, whose wide experience among the southwestern ruins entitles his judgment to high consider-

ation. In his opinion the rectangular form of architecture, which succeeds the type under discussion, must have been evolved from the circular form by the bringing together, within a limited area, of many houses. This would result in causing the wall of one circular structure to encroach upon that of another, suggesting the partition instead of the double wall. This partition would naturally be built straight as a twofold measure of economy. Supposing three such houses to be contiguous to a central one, each separated from the latter by a straight wall, it may be seen that (as in the accompanying plan) the three sides

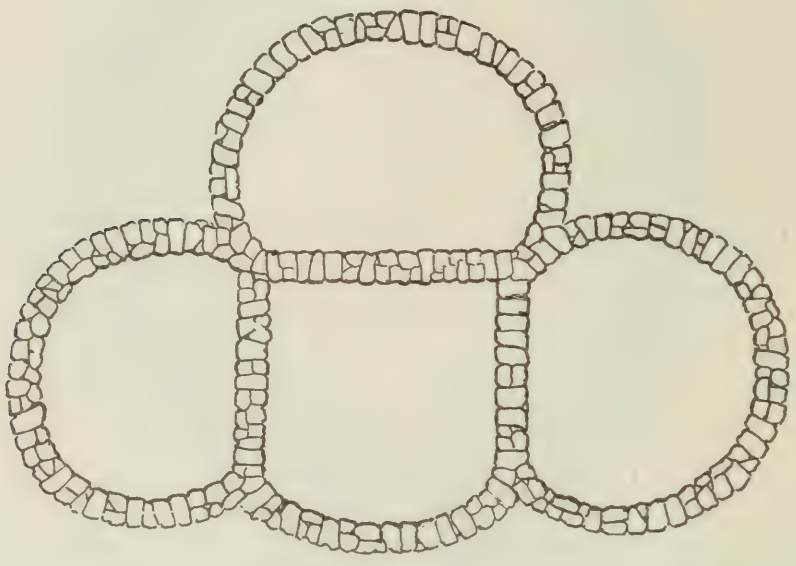


FIG. 494.—Evolution of rectangular forms in primitive architecture.

of a square are already formed, suggesting the parallelogramic as a convenient style of sequent architecture.

All this, I need scarcely add, agrees not only with my own observations in the field but with the kind of linguistic research above recorded. It would also apparently explain the occurrence of the circular semisubterranean *kí wi tsi we*, or estufas. These being sacred have retained the pristine form long after the adoption of a modified type of structure for ordinary or secular purposes, according to the well known law of survival in ceremonial appurtenances.

In a majority of the lava ruins (for example those occurring near Prescott, Arizona), I have observed that the sloping sides rather than the level tops of *mesa* headlands have been chosen by the ancients as building-sites. Here, the rude, square type of building prevails, not, however, to the entire exclusion of the circular type, which is represented by loosely constructed walls, always on the *outskirts* of the main ruins. The rectangular rooms are, as a rule, built row above row. Some of the houses in the upper rows give evidence of having overlapped others below. (See section, Fig. 495.)

FLAT AND TERRACED ROOFS DEVELOPED FROM SLOPING MESA-SITES.

We cannot fail to take notice of the indications which this brings before us.

(1) It is quite probable that the overlapping resulted from an increase in the numbers of the ancient builders relative to available area, this, as in the first instance, leading to a further massing together of the houses. (2) It suggested the employment of rafters and the formation of the *flat* roof, as a means of supplying a level entrance way and floor to rooms which, built above and to the rear of a first line of houses, yet extended partially over the latter. (3) This is I think the earliest form of the terrace.

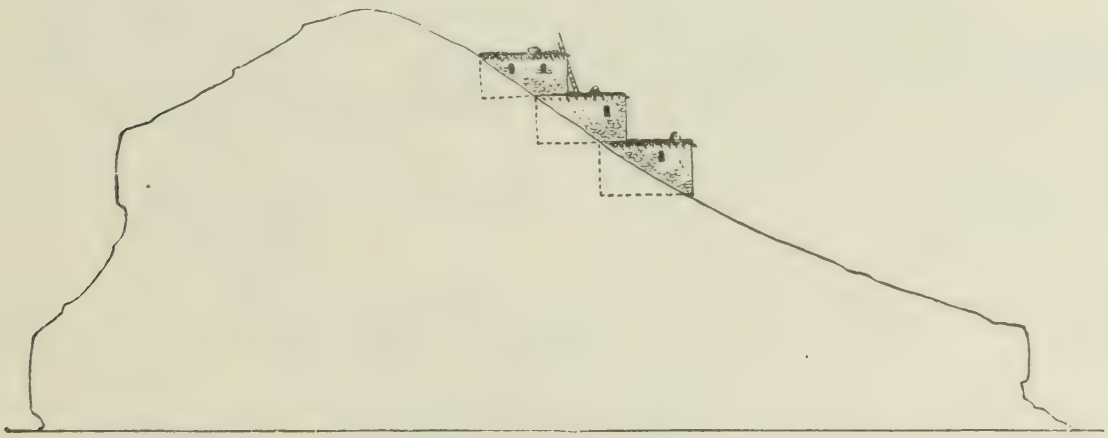


FIG. 495.—Section illustrating evolution of flat roof and terrace.

It is therefore not surprising that the flat roof of to-day is named *té k'os kwïn ne*, from *te*, space, region, extension, *k'os kwi e*, to cut off in the sense of closing or shutting in from one side, and *kwïn ne*, place of. Nor is it remarkable that no type of ruin in the Southwest *seems* to connect these first terraced towns with the later not only terraced but also literally cellular buildings, which must be regarded nevertheless as developed from them. The reason for this will become evident on further examination.

The modern name for house is *k'iá kwïn ne*, from *k'iá we*, water, and *kwin ne*, place of, literally "watering place;" which is evidence that the first properly so called houses known to the Pueblos were solitary and built near springs, pools, streams, or well-places. The universal occurrence of the vestiges of single houses throughout the less forbidding tracts of the Pueblo country (see Figs. 496 and 497) leads to this inference and to the supposition that the necessity for protection being at last overcome, the denizens of the lava-fields, where planting was well-nigh impossible, descended, building wherever conditions favored the horticulture which gradually came to be their chief means of support. As irrigation was not known until long afterwards, arable areas were limited, hence they were compelled to divide into families or small

clans, each occupying a single house. The traces of these solitary farm-houses show that they were at first single-storied. The name of an upper room indicates how the idea of the second or third story was developed, as it is *ósh ten u thlan*, from *ósh ten*, a shallow cave, or rock-

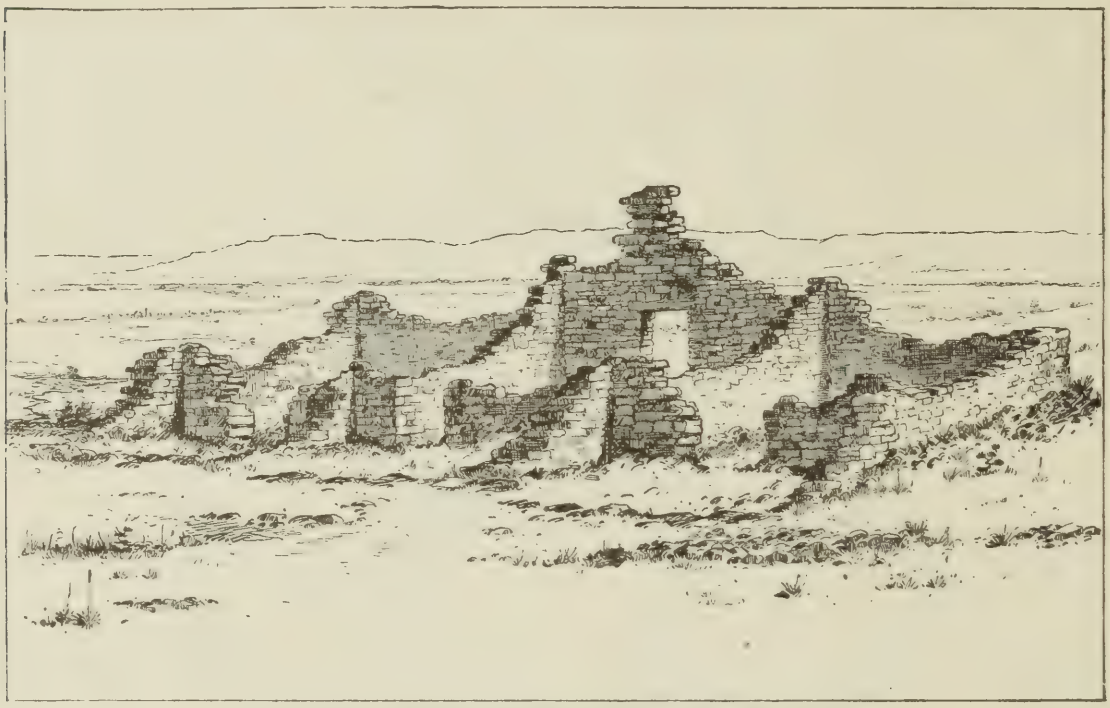


FIG. 496.—Perspective view of a typical solitary house.

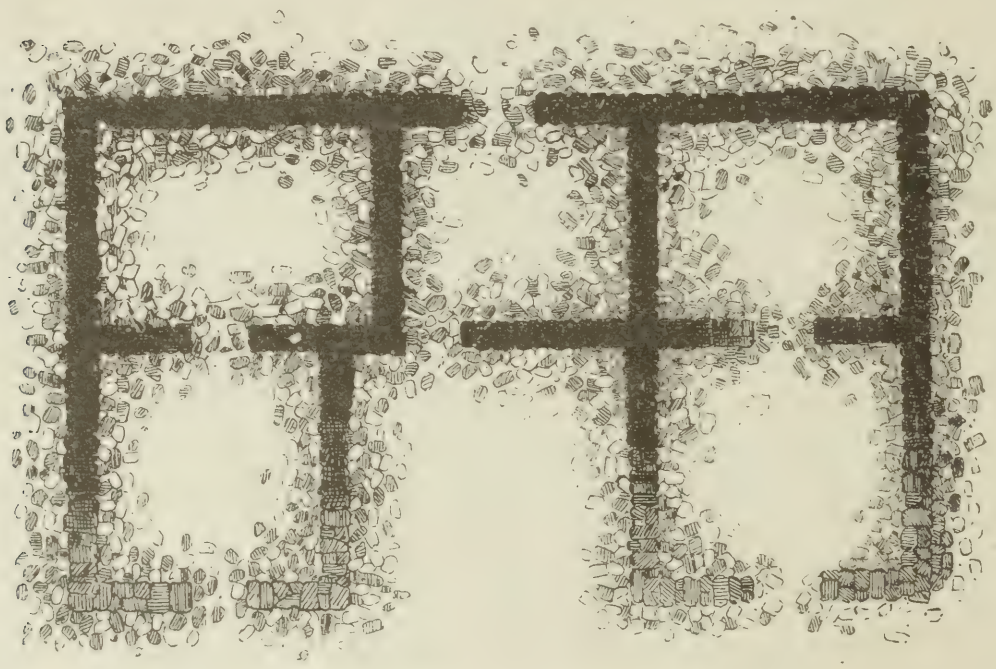


FIG. 497.—Plan of a typical solitary house.

shelter, and *ú thla nai e*, placed around, embracing, inclusive of. This goes to show that it was not until after the building of the first small farm-houses (which gave the name to houses) that the caves or rock-

shelters of the cliffs were occupied. If predatory border-tribes, tempted by the food-stores of the horticultural farm-house builders, made incursions on the latter, they would find them, scattered as they were, an easy prey.

ADDED STORIES FOR CLIFF DWELLINGS DEVELOPED FROM LIMITATIONS OF CLIFF-HOUSE SITES.

This condition of things would drive the people to seek security in the neighboring cliffs of fertile cañons, where not only might they build their dwelling places in the numerous rock-shelters, but they could also cultivate their crops in comparative safety along the limited tracts

FIG. 498.—A typical cliff-dwelling.

which these eyries overlooked. The narrow foothold afforded by many of these elevated cliff-shelves or shelters would force the fugitives to construct house over house; that is, build a second or upper story

around the roof of the cavern. What more natural than that this upper room should take a name most descriptive of its situation—as that portion built around the cavern-shelter or *ósh ten*—or that, when the intervention of peace made return to the abandoned farms of the plains or a change of condition possible, the idea of the second story should be carried along and the name first applied to it survive, even to the present day? That the upper story took its name from the rock-shelter may be further illustrated. The word *ósh ten* comes from *ó sho nan te*, the condition of being dusky, dank, or mildewy; clearly descriptive of a cavern, but not of the most open, best lighted, and driest room in a Pueblo house.

To continue, we may see how the necessity for protection would drive the petty clans more and more to the cliffs, how the latter at every available point would ultimately come to be occupied, and thus how the "*Cliff-dwelling*" (see Fig. 498), was confined to no one section but was as universal as the farm-house type of architecture itself, so widespread, in fact, that it has been heretofore regarded as the monument of a great, now extinct *race* of people!

COMMUNAL PUEBLOS DEVELOPED FROM CONGREGATION OF CLIFF-HOUSE TRIBES.

We may see, finally, how at last the cañons proved too limited and in other ways undesirable for occupation, the result of which was the confederation of the scattered cliff-dwelling clans, and the construction,

FIG. 499.—Typical terraced communal pueblo.

first on the overhanging cliff-tops, then on *mesas*, and farther and farther away, of great, many-storied towns, any one of which was named, in consequence of the bringing together in it of many houses and clans, *thlu él lon ne*, from *thlu a*, many springing up, and *él lon a*, that which stands, or those which stand; in other words, "many built standing together." This cannot be regarded as referring to the simple fact that a village is necessarily composed of many houses standing together. The name for any other village than a communal pueblo is *tí na kwïn ne*, from *tí na*—many sitting around, and *kwïn ne*, place of. This term is applied by the Zuñis to all villages save their own and those of ourselves, which latter they regard as Pueblos, in their acceptation of the above native word.

Here, then, in strict accordance with the teachings of myth, folk-lore and tradition, I have used the linguistic argument as briefest and most convincing in indicating the probable sequence of architectural types in the evolution of the Pueblo; from the brush lodge, of which only the name survives, to the recent and present terraced, many-storied, communal structures, which we may find throughout New Mexico, Arizona, and contiguous parts of the neighboring Territories.[1]

[1] See for confirmation the last Annual Report to the Archæological Institute of America, by Adolph F. Bandelier, one of the most indefatigable explorers and careful students of early Spanish history in America.

POTTERY AFFECTED BY ENVIRONMENT.

There is no other section of the United States where the potter's art was so extensively practiced, or where it reached such a degree of perfection, as within the limits of these ancient Pueblo regions. To this statement not even the prolific valleys of the Mississippi and its tributaries form an exception.

On examining a large and varied collection of this pottery, one would naturally regard it either as the product of four distinct peoples or as belonging to four different eras, with an inclination to the chronologic division.

When we see the reasonable probability that the architecture, the primeval arts and industries, and the culture of the Pueblos are mainly indigenous to the desert and semi-desert regions of North America, we are in the way towards an understanding of the origin and remarkable degree of development in the ceramic art.

In these regions water not only occurs in small quantities, but is obtainable only at points separated by great distances, hence to the Pueblos the first necessity of life is the transportation and preservation of water. The skins and paunches of animals could be used in the effort to meet this want with but small success, as the heat and aridity of the atmosphere would in a short time render water thus kept unfit for use, and the membranes once empty would be liable to destruction by drying. So far as language indicates the character of the earliest water vessels which to any extent met the requirements of the Zuñi ancestry, they were tubes of wood or sections of canes. The latter, in ritualistic recitation, are said to have been the receptacles that the creation-priests filled with the sacred water from the ocean of the cave-wombs of earth, whence men and creatures were born, and the name for one of these cane water vessels is *shó tom me*, from *shó e*, cane or canes, and *tóm me*, a wooden tube. Yet, although in the extreme western borders of the deserts, which were probably the first penetrated by the Pueblos, the cane grows to great size and in abundance along the two rivers of that country, its use, if ever extensive, must have speedily given way to the use of gourds, which grew luxuriantly at these places and were of better shapes and of larger capacity. The name of the gourd as a vessel is *shop̨ tom me*, from *shó e*, canes, *pó pon nai e*, bladder-shaped, and *tóm me*, a wooden tube; a seeming derivation (with the exception of the interpolated sound significant of form) from *shó tom me*. The gourd itself is called *mó thlâ â*, "hard fruit." The inference is that when used

as a vessel, and called *shoṕ tom me*, it must have been named after an older form of vessel, instead of after the plant or fruit which produced it.

While the gourd was large and convenient in form, it was difficult of transportation owing to its fragility. To overcome this it was encased in a coarse sort of wicker-work, composed of fibrous yucca leaves or of flexible splints. Of this we have evidence in a series of gourd-vessels among the Zuñis, into which the sacred water is said to have been transferred from the tubes, and a pair of which one of the priests, who came east with me two years ago, brought from New Mexico to Boston in his hands—so precious were they considered as relics—for the purpose of replenishing them with water from the Atlantic. These vessels are encased rudely but strongly in a meshing of splints (see Fig. 500), and while I do not positively claim that they have been piously

FIG. 500.—Gourd vessel enclosed in wicker.

preserved since the time of the universal use of gourds as water-vessels by the ancestry of this people, they are nevertheless of considerable antiquity. Their origin is attributed to the priest-gods, and they show that it must have once been a common practice to encase gourds, as above described, in osiery.

POTTERY ANTICIPATED BY BASKETRY.

This crude beginning of the wicker-art in connection with water-vessels points toward the development of the wonderful water-tight basketry of the southwest, explaining, too, the resemblance of many of its typical forms to the shapes of gourd-vessels. Were we uncertain of

this, we might again turn to language, which designates the impervious wicker water-receptacle of whatever outline as *tóm ma*, an evident derivation from the restricted use of the word *tóm me* in connection with gourd or cane vessels, since a basket of any other kind is called *tsí ì le*.

It is readily conceivable that water-tight osiery, once known, however difficult of manufacture, would displace the general use of gourd-vessels. While the growth of the gourd was restricted to limited areas, the materials for basketry were everywhere at hand. Not only so, but basket-vessels were far stronger and more durable, hence more readily transported full of water, to any distance. By virtue of their rough surfaces, any leakage in such vessels was instantly stopped by a daubing of pitch or mineral asphaltum, coated externally with sand or coarse clay to harden it and overcome its adhesiveness.

We may conclude, then, that so long as the Pueblo ancestry were semi nomadic, basketry supplied the place of pottery, as it still does for the less advanced tribes of the Southwest, except in cookery. Possibly for a time basketry of this kind served in place of pottery even for cookery, as with one of the above-mentioned tribes, the *Ha va su paí* or Coçoninos, of Cataract Cañon, Arizona. These people, until recently,

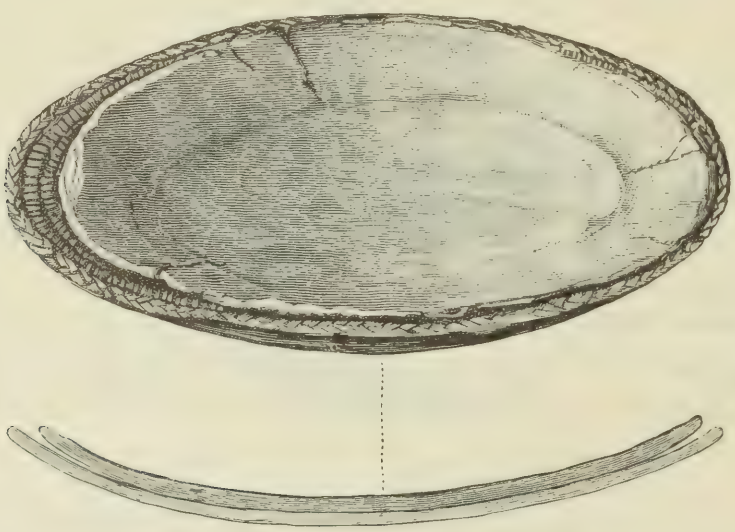


FIG. 501.—Havasupaí clay-lined roasting-tray.

were cut off from the rest of the world by their almost impenetrable cañon, nearly half a mile in depth at the point where they inhabit it. For example, when I visited them in 1881, they still hafted sharpened bits of iron, like celts, in wood. They had not yet forgotten how to boil food in water-tight basketry, by means of hot stones, and continued to roast seeds, crickets, and bits of meat in wicker-trays, coated inside with gritty clay. (See Fig. 501.) The method of preparing and using these roasting-trays has an important bearing on several questions to which reference will be made further on. A round basket-tray, either loosely or closely woven, is evenly coated inside with clay, into which has been kneaded a very large proportion of sand, to prevent contraction and

consequent cracking from drying. This lining of clay is pressed, while still soft, into the basket as closely as possible with the hands and then allowed to dry. The tray is thus made ready for use. The seeds or other substances to be parched are placed inside of it, together with a quantity of glowing wood-coals. The operator, quickly squatting, grasps the tray at opposite edges, and, by a rapid spiral motion up and down, succeeds in keeping the coals and seeds constantly shifting places and turning over as they dance after one another around and around the tray, meanwhile blowing or puffing the embers with every breath to keep them free from ashes and glowing at their hottest.

That this clay lining should grow hard from continual heating, and in some instances separate from its matrix of osiers, is apparent. The clay form thus detached would itself be a perfect roasting-vessel.

POTTERY SUGGESTED BY CLAY-LINED BASKETRY.

This would suggest the agency of gradual heat in rendering clay fit for use in cookery and preferable to any previous makeshift. The modern Zuñi name for a parching-pan, which is a shallow bowl of blackware, is *thlé mon ne*, the name for a basket-tray being *thlä' lin ne*. The latter name signifies a shallow vessel of twigs, or *thlá we;* the former etymologically interpreted, although of earthenware, is a hemispherical vessel of the same kind and *material*. All this would indicate that the *thlä' lin ne*, coated with clay for roasting, had given birth to the *thlé mon ne*, or parching-pan of earthenware. (See Fig. 502.)

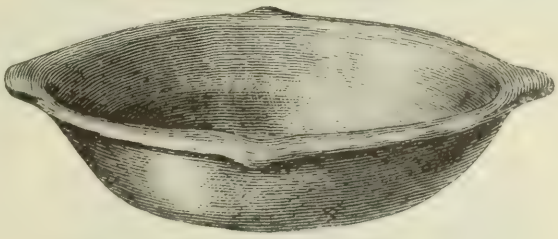


FIG. 502.—Zuñi earthenware roasting tray.

Among the Havasupaí, still surviving as a sort of bucket, is the basket-pot or boiling-basket, for use with hot stones, which form I have also found in some of the cave deposits throughout the ancient Zuñi country. These vessels (see Fig. 503) were bottle-shaped and provided near the rims of their rather narrow mouths with a sort of cord or strap-handle, attached to two loops or eyes (Fig. 503 *a*) woven into the basket, to facilitate handling when the vessel was filled with hot water. In the manufacture of one of these vessels, which are good examples of the helix or spirally-coiled type of basket, the beginning was made

at the center of the bottom. A small wisp of fine, flexible grass stems or osiers softened in water was first spirally wrapped a little at one end

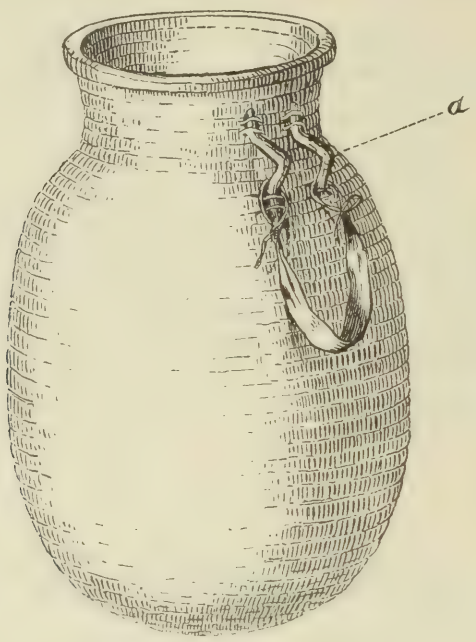


FIG. 503.—Havasupai boiling-basket.

with a flat, limber splint of tough wood, usually willow (see Fig. 504). This wrapped portion was then wound upon itself; the outer coil thus formed (see Fig. 505) being firmly fastened as it progressed to the one already made by passing the splint wrapping of the wisp each time it was wound around the latter through some strands of the contiguous inner coil, with the aid of a bodkin. (See Fig. 506.) The bottom was

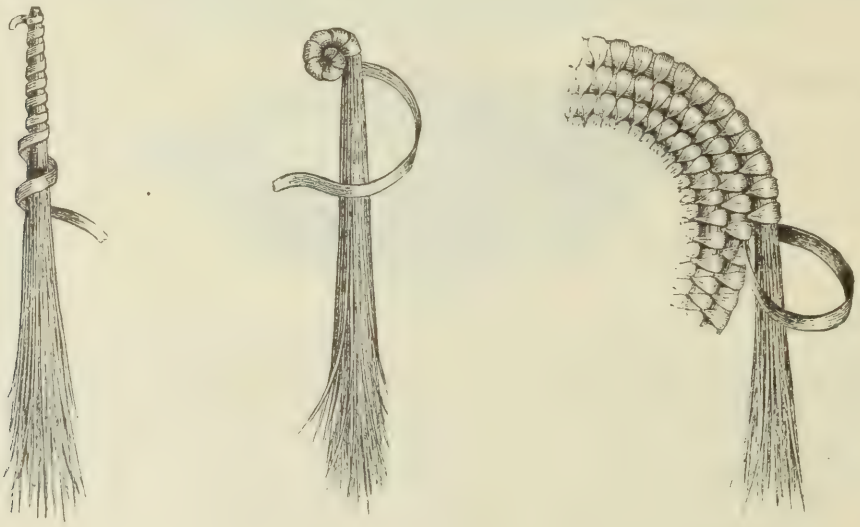


FIG. 504. FIG. 505. FIG. 506.

Sketches illustrating manufacture of spirally-coiled basketry.

rounded upward and the sides were made by coiling the wisp higher and higher, first outward, to produce the bulge of the vessel, then inward, to form the tapering upper part and neck, into which the two little twigs or splint loop-eyes were firmly woven. (See again Fig. 503 *a*.)

These and especially kindred forms of basket-vessels were often quite elaborately ornamented, either by the insertion at proper points of dyed wrapping-splints, singly, in pairs, or in sets, or by the alternate painting of pairs, sets, or series of stitches. Thus were produced angular devices, like serrated bands, diagonal or zigzag lines, chevrons, even terraces and frets. (See Figs. 507, 508, 509.) There can be no doubt that

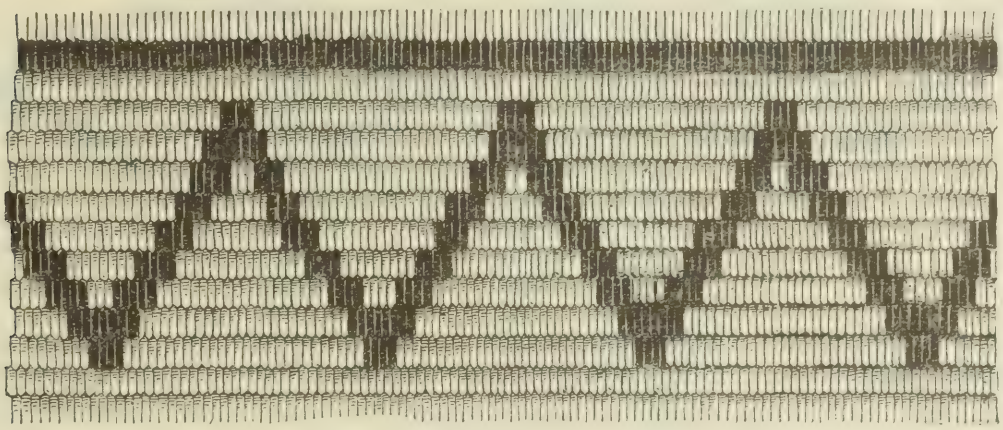


FIG. 507.—Typical basket decoration.

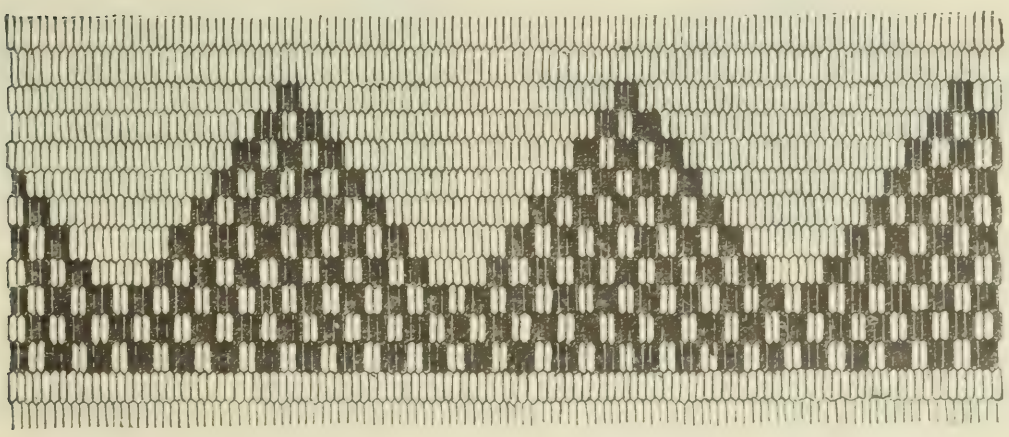


FIG. 508.—Typical basket decoration.

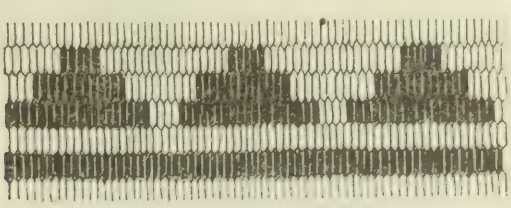


FIG. 509.—Typical basket decoration.

these styles and ways of decoration were developed, along with the weaving of baskets, simply by elaborating on suggestions of the lines and figures unavoidably produced in wicker-work of any kind when strands of different colors happened to be employed together. Even slight discolorations in occasional splints would result in such suggestions, for the stitches would here show, there disappear. The probability of this view of the accidental origin of basket-ornamentation may

be enhanced by a consideration of the etymology of a few Zuñi decorative terms, more of which might be given did space admit. A terraced lozenge (see Figs. 510, 511), instead of being named after the abstract

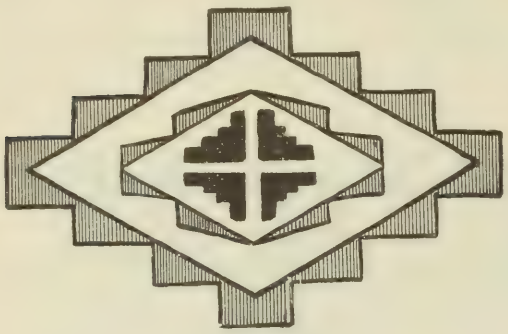


FIG. 510.

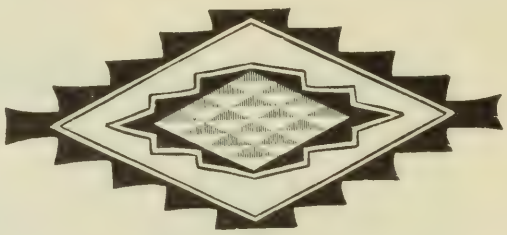


FIG. 511.

Terraced lozenge decoration, or "double-splint-stitch-forms."

word *a wi thlui ap í pä tchi na*, which signifies a double terrace or two terraces joined together at the base, is designated *shu k'u tu li a tsi' nan*, from *shu e*, splints or fibers; *k'u tsu*, a double fold, space, or stitch (see

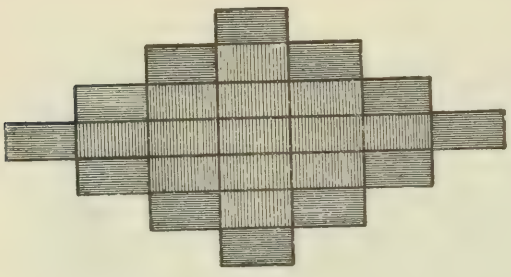


FIG. 512.

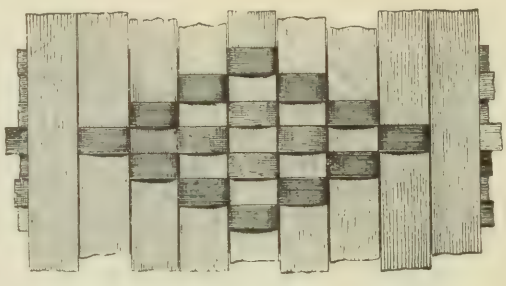


FIG. 513.

Double-splint-stitch.

Figs. 512, 513); *li a*, an interpolation referring to form; and *tsi' nan*, mark; in other words, the "double splint-stitch-form mark." Likewise, a pat-

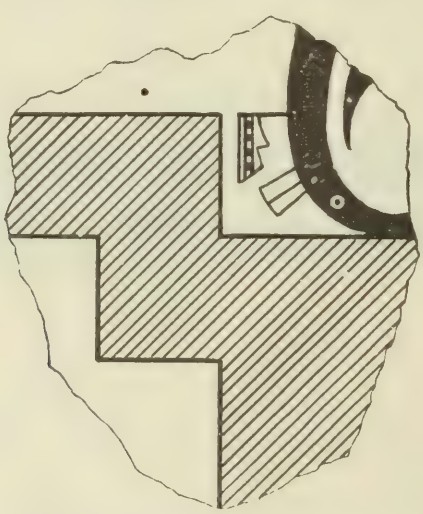


FIG. 514.—Diagonal parallel-line decoration.

tern, composed principally of a series of diagonal or oblique parallel lines *en masse* (see Fig. 514), is called *shu' k'ish pa tsí nan*, from *shú e*,

splints; *k'i'sh pai e*, tapering (*k'ish pon ne*, neck or smaller part of anything); and *tsí nan*, mark; that is, "tapering" or "neck-splint mark." Curiously enough, in a bottle-shaped basket as it approaches completion the splints of the tapering part or neck all lean spirally side by side of one another (see Fig. 515), and a term descriptive of this has come

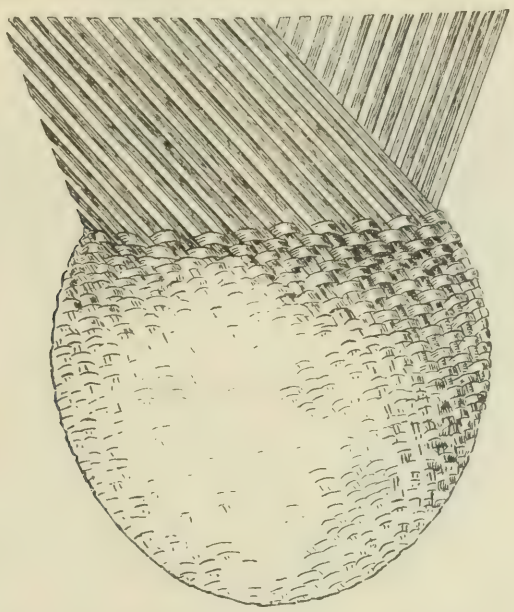


FIG. 515.—Splints at neck of unfinished basket.

to be used as that applied to lines resembling it, instead of a derivative from *ä's sël lai e*, signifying an oblique or leaning line. Where splints variously arranged, or stitches, have given names to decorations—applied even to painted and embroidered designs—it is not difficult for us to see that these same combinations, at first unintentional, must have suggested the forms to which they gave names as decorations.

Pueblo coiled pottery developed from basketry.—Seizing the suggestion afforded by the rude tray-molded parching-bowls, particularly after it was discovered that if well burned they resisted the effects of water as well as of heat, the ancient potter would naturally attempt in time to reproduce the boiling-basket in clay. She would find that to accomplish this she could not use as a mold the inside of the boiling-basket, as she had the inside of the tray, because its neck was smaller than its body. Nor could she form the vase by plastering the clay outside of the vessel, not only for the same reason, but also because the clay in drying would contract so much that it would crack or scale off. Naturally, then, she pursued the process she was accustomed to in the manufacture of the basket-bottle. That is, she formed a thin rope of soft clay, which, like the wisp of the basket, she coiled around and around a center to form the bottom, then spirally upon itself, now widening the diameter of each coil more and more, then contracting as she progressed upward until the desired height and form were attained. As the clay was adhesive, each coil was attached to the one already

formed by pinching or pressing together the connecting edges at short intervals as the winding went on. This produced corrugations or indentations marvelously resembling the stitches of basket-work. Hence accidentally the vessel thus built up appeared so similar to the basket which had served as its model that evidently it did not seem complete until this feature had been heightened by art. At any rate, the ma-

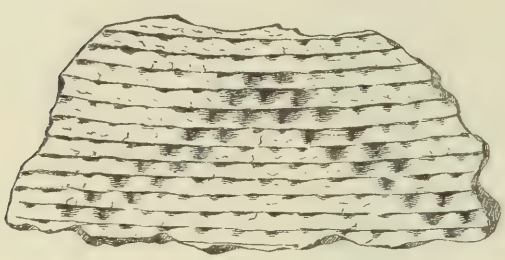


FIG. 516.

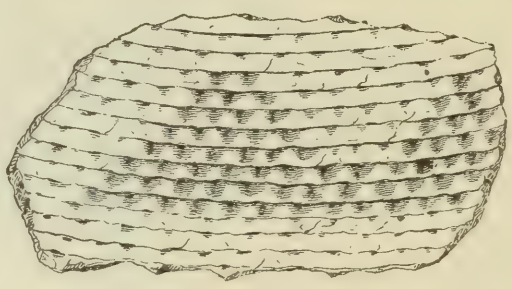


FIG. 517.

Examples of indented decoration on corrugated ware.

jority of specimens belonging to this type of pottery—especially those of the older periods during which it was predominant—are distinguished by an indented or incised decoration exactly reproducing the zigzags, serrations, chevrons, terraces, and other characteristic devices of water-tight basketry. (Compare Figs. 516, 517 with Figs. 507, 508.) Evi-

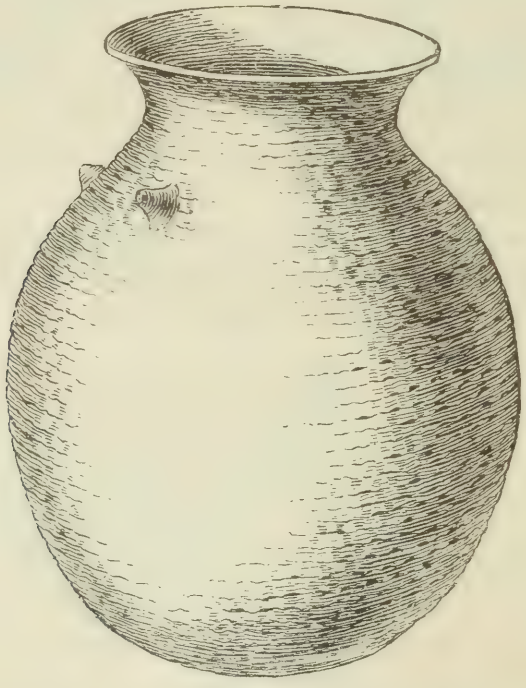


FIG. 518.—Cooking-pot of corrugated ware, showing conical projections near rim.

dently with a like intention two little cone-like projections were attached to the neck near the rim of the vessel (see Fig. 518) which may hence be regarded as survivals of the loops whereby it has been seen the ends of the strap-handle were attached to the boiling-basket. (See again Fig. 503, *a*.) Although varied in later times to form scrolls,

rosettes, and other ornate figures (see Fig. 519), they continued ever after quite faithful features of the spiral type of pot, and may even sometimes be seen on the cooking-vessels of modern Zuñi. To add yet another link to this chain of connection between the coiled boiling-basket and the spirally-built cooking-pot, the names of the two kinds

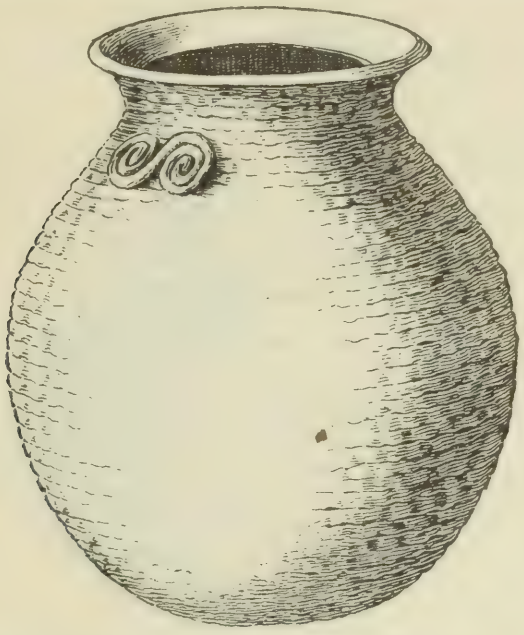


FIG. 519.—Cooking-pot of corrugated ware, showing modified projections near rim.

of vessels may be given. The boiling-basket was known as *wó li a k'ia ní tu li a tom me*, the corrugated cooking pot as *wo li a k'ia te' ni tu li a ton ne*, the former signifying "coiled cooking-basket," the latter "coiled earthenware cooking-basket."

Other very important types of vessels were made in a similar way.

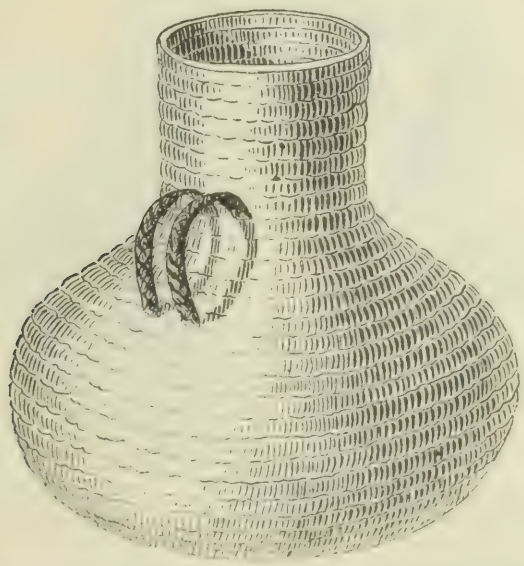


FIG. 520.—Wicker water-bottle, showing double loops for suspension.

I refer especially to canteens and water-bottles. The water-bottle of wicker differed little from the boiling-basket. It was generally rounder-

bodied, longer and narrower necked, and provided at one side near the shoulders or rim with two loops of hair or strong fiber, usually braided. (See Fig. 520.) The ends of the burden-strap passed through these loops made suspension of the vessel easy, or when the latter was used simply as a receptacle, the pair of loops served as a handle. Some-

FIG. 521.—Water-bottle of corrugated ware, showing double handle.

times these basket-bottles were strengthened at the bottom with raw-hide or buckskin, stuck on with gum. When, in the evolution of the pitcher, this type of basket was reproduced in clay, not only was the general form preserved, but also the details above described. That is,

FIG. 522.—Water-bottle of corrugated ware, showing plain bottom.

without reference to usefulness—in fact at no small expense of trouble—the handles were almost always made double (see Fig. 521); indeed, often braided, although of clay. Frequently, especially as time went on, the bottoms were left plain, as if to simulate the smooth skin-bottoming of the

basket-bottles. (See Fig. 522.) At first it seems odd that with all these points of similarity the two kinds of water-vessel should have totally dissimilar names; the basket-bottle being known as the *k'iá pu k'ia tom me*, from *k'iá pu kĭa*, "for carrying or placing water in," and *tóm me;* the handled earthen receptacle, as the *í mush ton ne.* Yet when we consider that the latter was designed not for transporting water, for which it was less suited than the former, but for holding it, for which it was even preferable, the discrepancy is explained, since the name *í mush ton ne* is from *i' mu*, to sit, and *tóm me*, a tube. This indicates, too, why the basket-bottle was not displaced by the earthen bottle. While the former continued in use for bringing water from a distance, the latter was employed for storing it. As the fragile earthen vessels were much more readily made and less liable to become tainted, they were exclusively used as receptacles, removing the necessity of the tedious manufacture of a large number of the basket-bottles. Again, as the pitcher was thus used exclusively as a receptacle, to be set aside in household or camp, the name *í' mush ton ne* sufficed without the interpolation *te*—"earthenware"—to distinguish it as of *terra cotta* instead of osiery.

POTTERY INFLUENCED BY LOCAL MINERALS.

Before discussing the origin of other forms, it may be well to consider briefly some influences, more or less local, which, in addition to the general effect of gourd-forms in suggesting basket-types and of the latter in shaping earthenware, had considerable bearing on the development of ceramic art in the Southwest, pushing it to higher degrees of perfection and diversity in some parts than in others.

Perhaps first in importance among these influences was the mineral character of a locality. Where clay occurred of a fine tough texture, easily mined and manipulated, the work in *terra cotta* became proportionately more elaborate in variety and finer in quality. There are to be found about the sites of some ancient pueblos, potsherds incredibly abundant and indicating great advancement in decorative art, while near others, architecturally similar, even where evidence of ethnic connection is not wanting, only coarse, crudely-molded, and painted fragments are discoverable, and these in limited quantity.

An example in point is the ruined pueblo of *A' wat u i* or *Aguatóbi*, as it was known to the Spaniards at the time of the conquest, when it was the leading "city of the Province of Tusayan," now Moki. Over the entire extent of this ruin, and to a considerable distance around it, fragments of the greatest variety in color, shape, size, and finish of ware occur in abundance. In the immediate neighborhood, however, are extensive, readily accessible formations producing several kinds of

clay and nearly all the color minerals used in the Pueblo potter's art. Yet at the greatest ruin on the upper Colorado Chiquito (in an arm of the valley of which river *A' wat ú i* itself occurs), where the fallen walls betoken equal advancement in the status of the ancient builders and indicate by their vast extent many times the population of *A' wat u i*, the potsherds are coarse, irregular in curvature, badly decayed, and exceptionally scarce. In the immediate neighborhood of this ruin, I need not add, clay is of rare occurrence and poor in quality.

A more reliable example is furnished by the farming pueblos of Zuñi. At *Hé sho ta tsí nan* or Ojo del Pescado, fifteen miles east of Zuñi, clays of several varieties and color minerals are abundant. The finest pottery of the tribe is made there in great quantity, while, notwithstanding the facilities for transportation which the Zuñis now possess, at the opposite farming town of *K'iáp kwai na kwin*, or Los Ojos Calientes, where clay is scarce and of poor texture, the pottery, although somewhat abundant, is of miserable quality and of bad shape.

In quality of art quite as much as in that of material this local influence was great. In the neighborhood of ruined pueblos which occur near mineral deposits furnishing a great variety of pigment-material, the decoration of the ceramic remains is so surprisingly and universally elaborate, beautiful, and varied as to lead the observer to regard the people who dwelt there as different from the people who had inhabited towns about the sites of which the sherds show not only meager skill and less profuse decorative variety, but almost typical dissimilarity. Yet tradition and analogy, even history in rare instances, may declare that the inhabitants of both sections were of common derivation, if not closely related and contemporaneous. Probably, at no one point in the Southwest was ceramic decoration carried to a higher degree of development than at *A' wat u i*, yet the Oraibes, by descent the modern representatives of the *A' wat u i ans* are the poorest potters and painters among the Mokis. Near their pueblo the clay and other mineral deposits mentioned as abundant at *A' wat u i* are meager and inaccessible. Still, it may be urged that time may have introduced other than natural causes for change; this could not be said of another example pertaining to one period and a single tribe. I refer again to the Zuñis. The manufactures of Pescado probably surpass in decorative excellence all other modern Pueblo pottery, while both in their lack of variety and in delicacy of execution of their painted patterns the fictiles of Ojo Caliente are so inferior and diverse from the other Zuñi work that the future archæologist will have need to beware, or (judging alone from the ceramic remains which he finds at the two pueblos) he will attribute them at least to distinct periods, perhaps to diverse peoples.

POTTERY INFLUENCED BY MATERIALS AND METHODS USED IN BURNING.

Other influences, to a less extent local, had no inconsiderable effect on primitive Pueblo pottery: materials employed and methods resorted to in burning.

Only one kind of fuel, except for a single class of vessels, is now used in pottery-firing; namely, dried cakes or slabs of sheep-dung. Anciently, several varieties, such as extremely dry sage-brush or grease-wood, piñon and other resinous woods, dung of herbivora when obtainable, charcoal, and also bituminous or cannel-coal were employed. The principal agent seems, however, to have been dead-wood or spunk, pulverized and moistened with some adhesive mixture so that flat cakes could be formed of it. I infer this not alone from Zuñi tradition, which is not ample, but from the fact that the sheep-dung now used is called, in the condition of fuel, *kú ne a*, while its name in the abstract or as sheep-dung simply is *má he*. Dry-rot wood or spunk is known as *kú me*. In the shape of flat cakes it would be termed *kú mo we* or *kú me a*, whence I doubt not the modern word *kú ne a* is derived.

Of methods, four were in vogue. The simplest and worst consisted in burying the vessel to be burned under hot ashes and building a fire around it, or inverting it over a bed of embers and encircling it with a blazing fire of brush-wood, as is still the practice of the Maricopas and other sedentary tribes of the Gila. The most common was building a little cone or dome of fuel over the articles to be baked and firing; the most perfect was to dig or construct under ground a little cist or kiln, line it evenly with fuel, leaving a central space for the green ware, and slowly fire the whole mass.

Irrespective of the kind of fuel used, the baking by ash-burial made the ware gray, cloudy, or dingy, and not very durable. Pottery burned with sage or grease-wood was firm, light gray unless of ocherous clay, less cloudy than if ash-baked, yet mottled. Turf and dung, although easily managed, did not thoroughly harden the pottery, but burned it very evenly; dead wood or spunk-cakes baked as evenly as any of the materials thus far mentioned, and more thoroughly than the others. Resinous or pitchy woods, while they produced a much higher degree of heat, could be used only when color was unimportant, as they still are used to some extent in the firing of black-ware or cooking pots. The latter, while still hot from a preliminary burning, if coated externally with the mucilaginous juice of green cactus, internally with piñon gum or pitch, and fired a second or even a third time with resinous wood-fuel, are rendered absolutely fire-proof, semi-glazed with a black gloss inside, and wonderfully durable. Tradition represents that by far the most perfect fuel was found to be cannel coal, and that, where abundant, accessible, and of an extremely bituminous quality, it was much used.

The traces of little pit-kilns filled with cinders of mineral coal about many of the ruins in the northwestern portion of the Pueblo region, coupled with the semi-fusion and well-preserved condition of most of the ancient jars found associated with them, certainly give support to this tradition. Happily I have additional confirmation. When, two years ago, I was engaged in making ethnologic collections at Moki for the United States National Museum, some Indians of the *Te wa* pueblo brought me a quantity of pottery. It had been made with the purpose of deceiving me, in careful imitation of ancient types, and was certainly equal to the latter in lightness and the condition of the burning. I paid these enterprising Indians as good a price as they had been accustomed to getting for genuine ancient specimens, but told them that, being a Zuñi, I was almost one of themselves, hence they could not deceive me, and asked them how they had so cleverly succeeded in burning the ware. They laughingly replied that they had simply dug some bituminous coal (*u á ko*) and used it in little pits. When I further asked them why they did not burn their household utensils thus, they said it was too uncertain; representing that the pots did not like to be burned in the *u á ko*, probably because it was so hot, hence they broke more frequently than if fired in the common way with dried sheep-dung; furthermore the latter was less troublesome, requiring only to be dug from the corrals near at hand and dried to make it ready for use.

This partially explains why the art of water-tight basket-making has here gradually declined since the Spanish conquest, as the ceramic industry has increased with the introduction of the sheep, which furnishes fuel for the burning, and the horse, before unknown, has facilitated transportation, whereby trade for this class of basketry with the distant nomadic tribes who still make it is rendered easy. Withal, however, the quality of pottery has not improved, but has deteriorated; as sheep-dung is but an inferior fuel for firing.

Bearing these statements in mind, the discussion of the evolution as well as of the distribution of form, and later of the evolution of decoration, in pottery will become easier. By lingering steps there was early developed a method of building up vessels by a process differing in part from the spiral. As the parching-bowl had been evolved from the roasting-tray, so, we may infer, the food-bowl was suggested by the hemispherical food-trencher of wicker-work. (See Fig. 523.) Yet, curiously

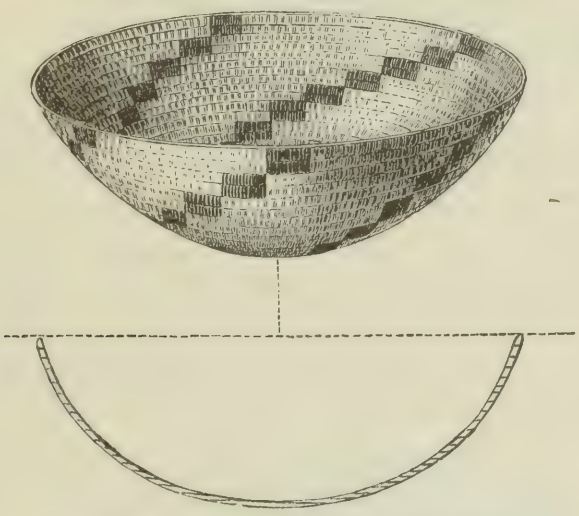


FIG. 523.—Food trencher of wicker-work.

enough, the inside of the latter seems not at first to have been used in molding the food-bowl, as, it will be remembered, the tray had been in forming the parching-pan. On the contrary, the clay was coiled around

FIG. 524.—Food trencher of wicker-work inverted as used in forming food-bowls of earthenware.

and around the *outside* of the bottom of an inverted basket bowl (see Fig. 524), instead of being pressed evenly into it. As with the cooking pot, so with this; as the coiling progressed it was corrugated, not so much,

however from necessity, as from habit. In consequence of the difficulty experienced in removing these bowl-forms from the bottoms of the baskets—which had to be done while they were still plastic, to keep them from cracking—they were made very shallow. Hence the specimens found among the older ruins and graves are not only corrugated outside, but are also very wide in proportion to their height. (See Fig. 525.) As time went on it was found that bowls might be made deeper,

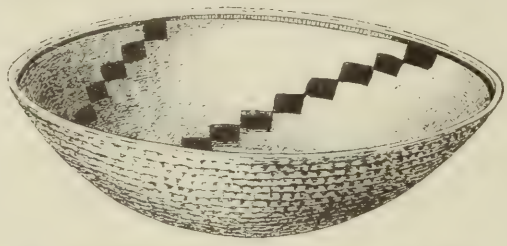


FIG. 525.—Ancient bowl of corrugated ware.

and yet readily be taken off from the basket bottoms, if slightly moistened outside and pressed evenly all around, or, better still, scraped; for, being plastic, this proceeding caused them to grow thinner, consequently larger, thereby to loosen from the basket over which they had been molded. As a result of this scraping, however, the corrugated surface was destroyed, nor could it easily be restored. Therefore bowls when made deep were, as a rule, smooth on the outside as well as on the interior surface. When by a perfectly natural sequence of events—as will be shown further on—ornamentation by painting came to be applied first to the plain interiors of the bowls, the smooth outer surface was found preferable to the corrugated surface, not only because it took paint more readily, but also because the bowl, when painted outside as well as inside, formed a far handsomer utensil for household use than if simply decorated by the older methods. As a consequence, we find that, while the larger vessels continued to be corrugated and indented, the smoothed and painted bowl came into general use. Associated later on with this secondary type of bowls occurred the larger vessels plain at the bottoms, still corrugated at the sides. Nor is this surprising, as the bowl, molded on the basket bottom and there smoothed, could be afterward built up by the spiral process. When in time the huge hemispherical canteens or water carriers of earthen-ware replaced the basket bottles, so also the water jar or *olla* replaced the handled sitter or pitcher, since it could be made larger to receive more copious supplies of water than the strength of the frail handles on the pitchers would warrant.

The water jar, like the food-bowl, is a conspicuous household article; for which reason the Zuñi woman expends all her ability to render them handsome. Judging by this, the desire to decorate the water-vessel with paint, like its constant companion the food-bowl, would early lead to the attempt to make its surface smooth. This would need to be effected while the article was still soft; which necessity probably led to the discovery that a jar of the corrugated or simply coiled type may be

smoothed while still plastic without danger of distortion, no matter what its size, if supported at the bottom in a basket or other mold so that it may be shifted or turned about without direct handling. (See Fig. 526.)

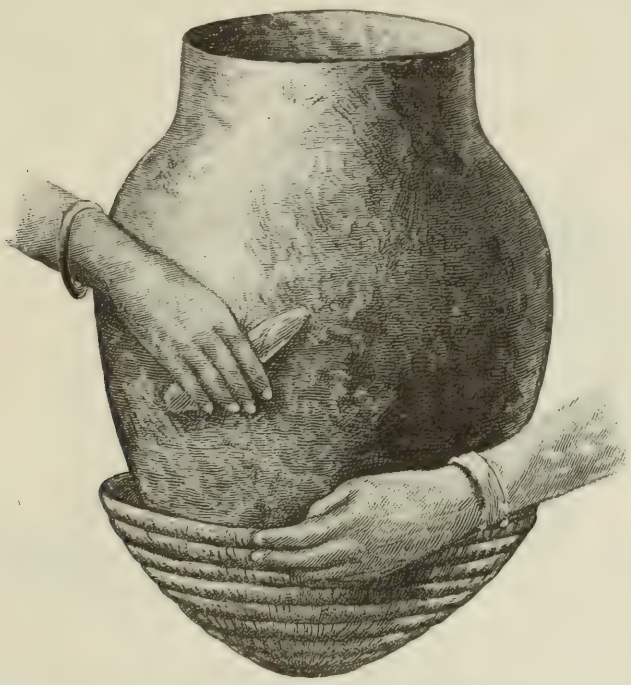


FIG. 526.—Basket-bowl as base-mold for large vessels.

After this discovery was made, the molding of large vessels was no longer accomplished by the spiral method exclusively. A lump of clay,

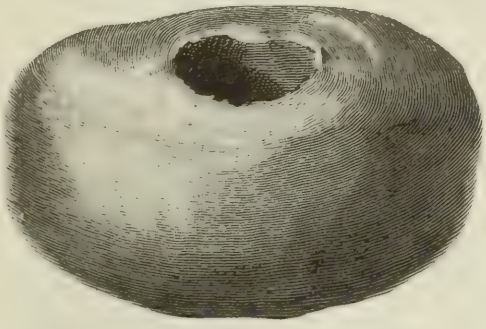


FIG. 527.—Clay nucleus for a vessel.

hollowed out (see Fig. 527), was shaped how rudely so ever on the bottom of the basket or in the hand (see Fig. 528), then placed inside of a

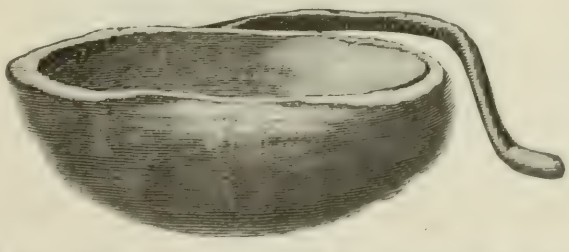


FIG. 528.—Clay nucleus shaped to form the base of a vessel.

hemispherical basket-bowl and stroked until pressed outward to conform with the shape, and to project a little above the edges of its tem-

porary mold, whence it was built up spirally (see Fig. 529) until the desired form had been attained, after which it was smoothed by scraping (see Fig. 530).

The necks and apertures of these earliest forms of the water jar were made very small in proportion to their other dimensions, presumably on account of the necessity of often carrying them full of water over steep and rough *mesa* paths, coupled perhaps with the imitation of

FIG. 529.—Clay nucleus in base-mold, with beginning of spiral building.

other forms. To render them as light as possible they were also made very thin. One of the consequences of all this was that when large they could not be stroked inside, as the shoulders or uttermost upper peripheries of the vessel could not be reached with the hand or scraper through the small openings. The effect of the pressure exerted in smoothing them on the outside, therefore, naturally caused the upper parts to

FIG. 530.—First form of vessel.

sink down, generating the spheroidal shape of the jar (see Fig. 531), one of the most beautiful types of the olla ever known to the Pueblos. At Zuñi, wishing to have an ancient jar of this form which I had seen, reproduced, I showed a drawing of it to a woman expert in the manufacture of pottery. Without any instructions from me beyond a mere statement of my wishes, she proceeded at once to sprinkle the inside of

a basket-bowl with sand, managing the clay in a way above described and continuing the vessel-shaping upward by spiral building. She did not at first make the shoulders low or sloping, but rounded or arched

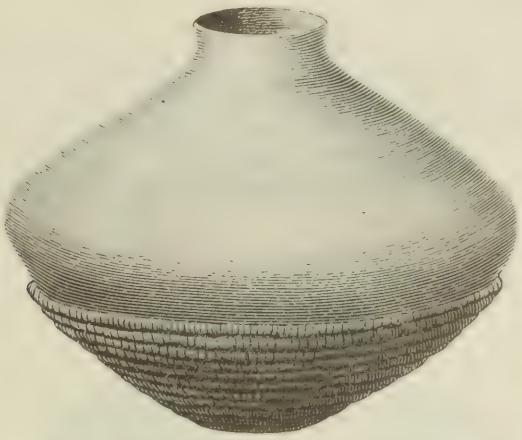


FIG. 531.—Secondary form in the mold.

them upward and outward (see again Fig. 529). At this I remonstrated, but she gave no heed other than to ejaculate "*wá na ni, àná!*" which meant "just wait, will you!" When she had finished the rim, she easily caused the shoulders to sink, simply by stroking them—more where uneven than elsewhere—with a wet scraper of gourd (see Fig. 532, *a*) until

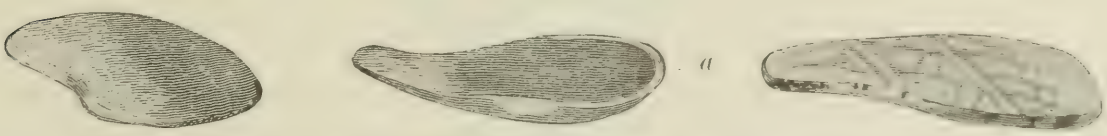


FIG. 532.—Scrapers of gourd and earthenware for smoothing pottery.

she had exactly reproduced the form of the drawing. She then set the vessel aside *in* the basket. Within two days it shrank by drying at the rate of about one inch in twelve, leaving the basket far too large. (See Fig. 533.) It could hence be removed without the slightest difficulty.

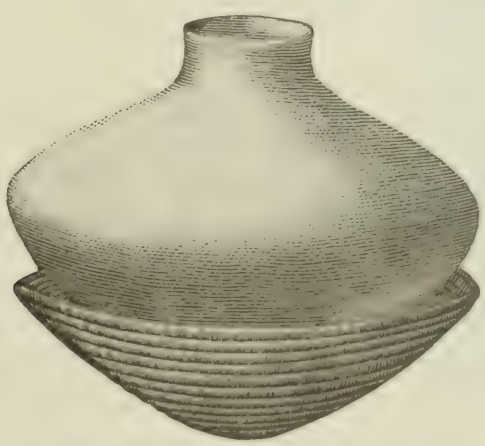


FIG. 533.—Finished form of vessel in mold, showing amount of contraction in drying.

The sand had prevented contact with the basket which would have caused the clay vessel to crack as the latter was very thin. This process

exists in full force to-day with the Oraibes in the modeling of convex-bottomed vessels, and the Zuñis thus make their large bowls and huge drum-jars.

Upon the bottoms of many jars of these forms, I have observed the impressions of the wicker bowls in which they had been molded—not entirely to be removed, it seems, by the most assiduous smoothing before burning; for, however smooth any exceptional specimen may appear, a squeeze in plaster will still reveal traces of these impressions.

A characteristic of these older forms of the water-jar is that they are invariably flat or round-bottomed, while more recent and all modern

FIG. 534.—Profile of olla, or modern water-jug.

types of the olla (see Fig. 534) are concave or hollowed at the base (see Fig. 535) to facilitate balancing on the head. Outside of this concavity and entirely surrounding it (Fig. 536, *a*) is often to be observed an indentation (see Fig. 536, *b*) usually slight although sometimes pronounced.

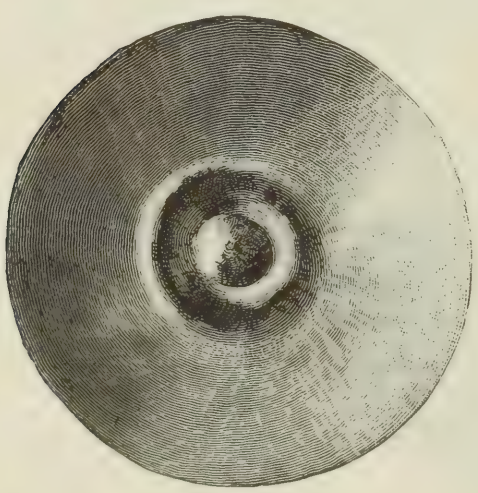


FIG. 535.—Base of olla.

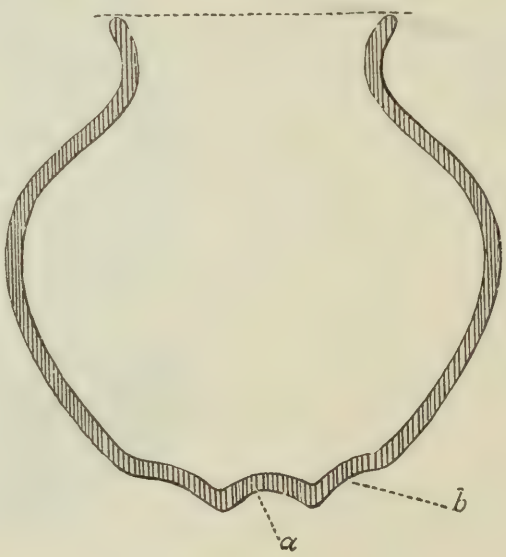


FIG. 536.—Section of olla.

This has no use, but there is of course a reason for its occurrence which, if investigated, may throw light on the origin of the modern type of the

olla itself. The older or round-bottomed jars were balanced on the head in carrying, by means of a wicker-work ring, a kind of "milk-maid's boss." (See Fig. 537.) These annular mats are still found among the ruins and cave-deposits, and continue in use with the modern Pueblos for

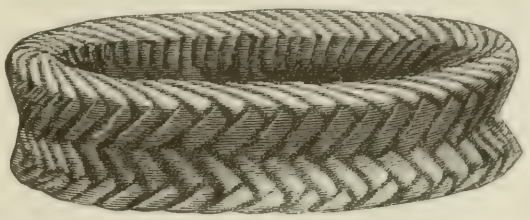


FIG. 537.—Annular mat of wicker, or "milkmaid's boss."

supporting convex-bottom cooking pots on the floor as well as for facilitating the balancing of large food-bowls on the head. (See Fig. 538.) Obviously the latter dishes have never been hollowed as the ollas have been, because, since they were used as eating-bowls, the food could be removed from a plain bottom more easily than from a convex surface, which would result from the hollowing underneath. Supposing that a

FIG. 538.—Use of annular mat illustrated.

water-jar chanced to be modeled in one of the convex-bottom bread-baskets (see Fig. 539), it would become necessary, on account of the thickness of these wicker bowls, to remove the form from the mold before it dried. By absorption it would dry so rapidly that it would crack, especially in contracting against the convexity in the center of the basket-bottom. (See Fig. 539, *a*.) In order that this form might be supported in an upright position until dry, it would naturally be placed on one of the wicker-rings. Moreover, that the bottom might not sink down or fall out, a wad of some soft substance would be placed within the ring. (See Fig 540, *a*.) As a consequence the weight of the plastic vessel would press the still soft bottom against the central wad, (Fig. 540, *a*) and the

wicker ring (Fig 540, *c*) sufficiently to cause the rounding upward of the cavity (Fig. 540, *b*) first made by the convex-bottom of the basket-mold, as well as form the encircling indentation (Fig. 540, *c*). Thus by accident, probably, only possibly by intention, was evolved the most useful and distinctive feature of the modern water-jar or olla, the *concave bottom*. This, once produced, would be held to be peculiarly con-

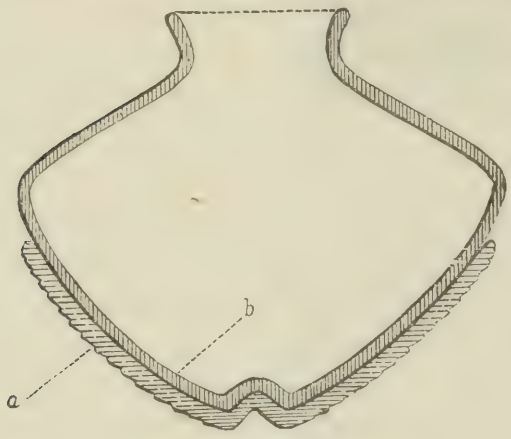


FIG. 539.—Section of incipient vessel in basket-mold.

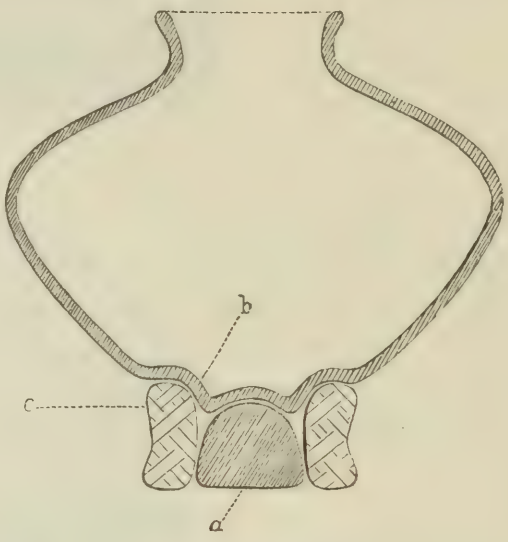


FIG. 540.—Section of vessel supported for drying.

venient, dispensing with the use of a troublesome auxiliary. Its reproduction would present grave difficulties unless the bottom of the first vessel, thickly coated with sand to prevent cracking, was employed as a mold, instead of the absorbent convex-centered basket-bowl.

I infer this because, to-day, a Zuñi woman is quite at a loss how to hollow the bottom of a water-jar if she does not possess a form or mold made from the base of some previously broken jar of the same type. She therefore, carefully preserves these precious bottoms of her broken ollas, even cementing together fractured ones, when not too badly shivered, with a mixture of pitch or mineral asphaltum and sand. I

FIG. 541.—Base-mold (bottom of water-jar).

have seen as many as a dozen or more of these molds (see Fig. 541) in a single store room.

As the practice of molding all new vessels of this class in the bottoms of older ones was general—I might say invariable—any peculiarities of form in the originals must have been communicated to those ensuing; from the latter to others, and so on, though in less and less

degree, to the present time. This theory is but tentative, yet it would also explain, on the score of association, why the Pueblo women slightly prefer the jars showing the indentation in question to more regular ones. With the change from elevated cliff or *mesa* habitations to more accessible ones, the Pueblo Indians were enabled to enlarge the apertures of their water-jars, since not only did the concave bases of the latter make the balancing of them more secure, but the trails over which they had to be carried from watering place to habitation were less rugged. A natural result of this enlargement of the openings, which admitted access with the scraper to the interior peripheries of the thin-walled jars, was the rounding upward of their shoulders, making them taller in proportion to their diameters. This modification of form in the water-jar, taken in connection with the fact that thus changed, it displaced the daily use of the canteen, explains the totally dissimilar names which were applied to the two types. The older, or spheroidal olla, was known as the *k'iáp ton ne*, from *kiá pu*, to place or carry water in, and *tóm me*; while the newer *olla* is called *k'iá wih na k'ia té èle*, from *k'iá wih na ki'a na ki'a*, for bringing of water: *té*, earthen-ware, and *ë' le* or *ë'l lai e*, to stand or standing. The latter term, *té è le*, is generic, being applied to nearly all *terra cotta* vessels which are taller than they are broad. *Té*, earthen ware, is derived from *t'eh'*, the root also of *té ne a*, to resound, to sound hollow; while *è le*, from *ë'l le* or *ël' lai ê*, to stand, is obviously applied in significance of comparative height as well as of function.

Thus I have thrown together a few conjectures and suggestions relative to the origin of the Southwestern pottery and the evolution of its principal forms.

I might go on, appealing to language to account for nearly every variety of pottery found existing as a *type* throughout the region referred to; but a subject inseparably connected with this, throwing light on it in many ways, and possessing in itself great interest, claims treatment on the few remaining pages of this essay. I refer to the evolution and significance or symbolism of Pueblo ceramic decorations.

Before proceeding with this, however, I must acknowledge that I am as much indebted to the teachings of Mr. E. B. Tylor, in his remarkable works on Man's Early History and Primitive Culture, to Lubbock, Daniel Wilson, Evans, and others, for the direction or *impetus* of these inquiries, as I am to my own observations and experiments for its development.

The line of gradual development in ceramic decorations, especially of the symbolic element, treated as a subject, is wider in its applicability to the study of primitive man, because more clearly illustrative of the growth of culture. I regret, therefore, that it must here be dealt with only in a most cursory manner. Large collections for illustration would be essential to a fuller treatment, even were space unlimited.

Decoratively, Pueblo pottery is characterized by two marked features: angular designs predominate and ornamental effect depends as much

FIG. 542.—Example of Pueblo painted ornamentation.

on the open or undecorated space as on the painted lines and areas in the devices. (See Fig. 542.) While this is true of recent and modern wares, it is more and more notably the case with other specimens in a ratio increasing in proportion to their antiquity.

We cannot explain these characteristics, and the conventional aspect of the higher and symbolic Pueblo ceramic decorations which grew out of them, in a better way than to suppose them, like the forms of this pottery, to be the survivals of the influence of basketry. (See, for comparison, Figs. 543, 544.) I shall be pardoned, therefore, for elaborating

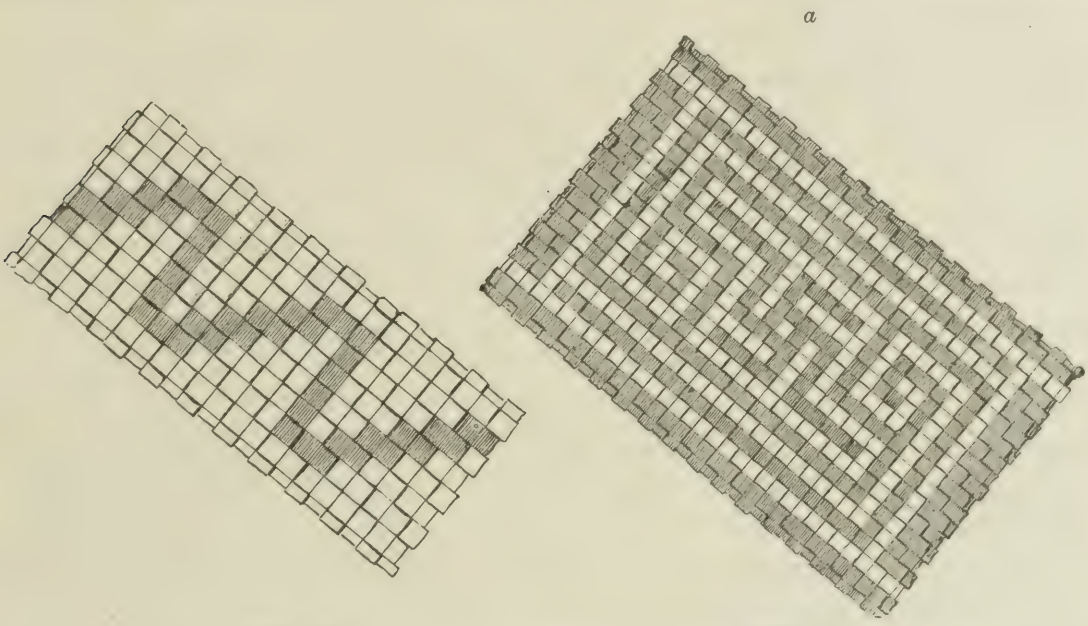


FIG. 543. FIG. 544.

Amazonian basket decorations.

suggestions already made in this direction, in the paragraphs which treated of the ornamentation of spiral ware, and of the derivation of basket decorations from stitch- and splint-suggested figures. All students of early man understand his tendency to reproduce habitual forms in accustomed association. This feeling, exaggerated with savages by a belief in the actual relationship of resemblance, is shown in the reproduction of the decorations of basket vessels on the clay vessels made from them or in imitation of them.

In entire conformity with this, the succession in the methods of the ornamentation of Pueblo pottery seems to have been first by incision or indentation; then by relief; afterward by painting in black on a natural or light surface; finally, by painting in color on a white or colored surface.

As before suggested, the patterns on the coiled, regularly indented pottery (which came to be first known to the world as a type, the "corrugated," through the earlier explorations and reports of Mr. William H. Holmes) were produced simply by emphasized indentation, more rarely by incision, and were almost invariably angular, reproducing exactly the designs on wicker work. Even in comparatively recent examples of the corrugated ware this is true; for, once connected with a type, a style of decoration, both seem to have been ever after inseparable, with at most but slight modification of the latter. One of these modifications, in both method and effect, was in the adoption of the raised or

relief style of ornamentation found, with rare exceptions in the Southwest, only on corrugated ware, and on the class which in modern times has replaced it there, vessels used in cookery. Although never universal, this style deserves passing attention as the outgrowth of an effort to attain the effect of contrast produced by dyed or painted splints on wicker work before the use of paint was known in connection with pottery. The same kind of investigation indicates that the Pueblos largely owed their textile industries and designs, as well as their potter's art, to the necessity which gave rise to the making of water-tight basketry. The terms connected with the rudimentary processes of weaving and embroidery, and the principal patterns of both (on, for example, blankets, kirtles, sacred girdles, and women's belts), are mostly susceptible of interpretation, like the terms in pottery, as having a meaning connected with the processes of basket plaiting and painting. This renders the conventional character of Pueblo textile ornaments easy of comprehension, as well as the very early, if not the earliest, origin of loom-weaving among our Indians in the desert regions of America.

Henceforward, then, we have only to consider decoration by painting. The probability is that this began as soon as the smooth surface in pottery was generally made; evidence of which seemingly exists; as eating bowls are, even to the present day, decorated principally on the interior; not, as may be supposed, because the exterior is more hidden from view, but because, as we have seen on a former page, bowls were made plain inside before the corrugated type formed on basket bottoms had been displaced by the smoothed type; and were naturally first decorated there with paint. It must be constantly borne in mind that a style of decoration once coupled with a kind of ware, or even a portion of a vessel, retained its association permanently.

It must have been early observed that clay of one kind, applied even thinly to the exterior of a vessel of another kind, produced, when burned, a different color. With the discovery that clays of different kinds burned in a variety of colors, to some extent irrespective of the methods and the materials used in firing, there must likewise have been hinted, we may safely conclude, the efficacy of clay washes as paint, and of paint as a decorative agent.

Among the ceramic remains from the oldest pueblo sites of the Southwest, pottery occurs, mostly in four varieties: the corrugated or spiral; the plain, yet rough gray; white decorated with geometric figures in black; and red, either plain or decorated with geometric devices in black and white. The gray or dingy brown, rough variety, resulted when a corrugated or coiled jar had been simply smoothed with the fingers and scraper before it was fired. A step in advance, easily and soon taken, was the additional smoothing of the vessel by slightly wetting and rubbing its outer surface. Even this was productive only of a moderately smooth surface, since, as learned by the Indian potters long before, in their experience with the clay-plastered parching-tray,

it was necessary to mix the clay of vessels with a tempering of sand, crushed potsherds, or the like, to prevent it from cracking while drying; this, of course, no amount of rubbing would remove. Hence, by another easy step, clay unmixed with a grit-tempering, made into a thin paste with water, and thickly applied to the half-dried jar with a dab or brush of soft fiber, gave a beautifully smooth surface, especially if polished afterward by rubbing with water-worn pebbles. The vessel thus prepared, when burned, assumed invariably a creamy, pure white, red-brown or, other color, according to the quality or kind of the clay used in making the paste with which it had been smoothed or washed.

Thus was achieved the art of producing at will fictiles of different colors, with which simple suggestion painting also became easy. Black, aside from clay paste, was almost the first pigment discovered; quite likely because the mineral blacks from iron ores, coal, and the various rocks used universally among Indians for staining splints, etc., would be the earliest tried, and then adopted, as they remained unchanged by firing. Thus it came about, as evidenced by the sequence of early remains in the Southwest, that the white and black varieties of pottery were the first made, then the red and black, and later the red with white and black decoration. Take, as an example, the latter. Of course it was a simple mode to employ the red (ocherous) clay for the wash, the blue clay (which burned white) for the white pigment in making lines, and any of the black minerals above mentioned for other marking.

In these earliest kinds of painted pottery the angular decorations of the corrugated ware or of basketry were repeated, or at the farthest only elaborated, although on some specimens the suggestions of the curved ornament already occurred. These resulted, I may not fear to claim, from carelessness or awkwardness in drawing, for instance, the corners of acute angles, which "cutting across-lot" would, it may be seen, produce the wavy or meandering line from the zigzag, the ellipsoid from the rectangle, and so on.

Precisely in accordance with this theory were the studies of my preceptor, the lamented Prof. Charles Fred. Hartt. In a paper "On Evolution in Ornament," published in several periodicals, among them the Popular Science Monthly of January, 1875, this gifted naturalist illustrated his studies by actual examples found on decorated burial urns from Marajó Island. I must take the liberty of suggesting, however, that upon some antecedent kind of vessel, the eyes of the Amazonian Islanders may have been, to give Professor Hartt's idea, "trained to take physiological and æsthetic delight in regularly recurring lines and dots"; not on the pottery itself, as he seemed to think, for decoration was old in basketry and the textiles when pottery was first made.

DECORATIVE SYMBOLISM.

On every class of food- and water-vessels, in collections of both ancient and modern Pueblo pottery (except, it is important to note, on pitchers and some sacred receptacles), it may be observed as a singular, yet almost constant feature, that encircling lines, often even ornamental

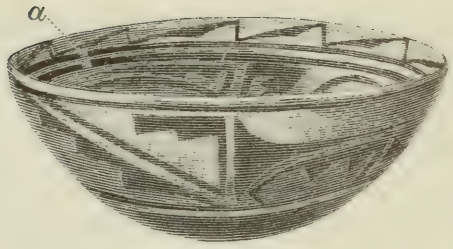


FIG. 545.—Food-bowl.

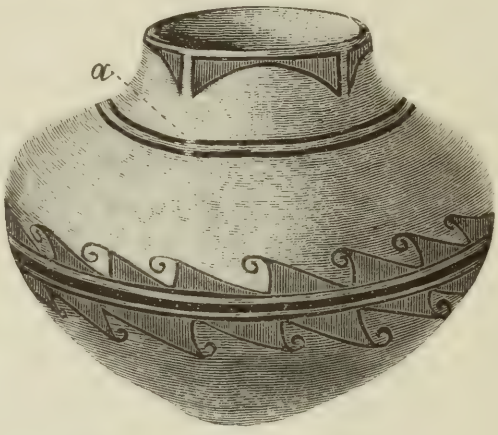


FIG. 546.—Water-jar.

(Showing open or unjoined space in line near rim.)

zones, are left open or not as it were closed at the ends. (See Figs. 545,*a*, 546,*a*.) This is clearly a conventional quality and seemingly of intentional significance. An explanation must be sought in various directions, and once found will be useful in guiding to an understanding of the symbolic element in Pueblo ceramic art. I asked the Indian women, when I saw them making these little spaces with great care, why they took so much pains to leave them open. They replied that to close them was *a'k ta ni*, "fearful!"—that this little space through the line or zone on a vessel was the "exit trail of life or being", *o' ne yäthl kwái na*, and this was all. How it came to be first left open and why regarded as the "exit trail," they could not tell. If one studies the mythology of this people and their ways of thinking, then watches them closely, he will, however, get other clews. When a woman has made a vessel, dried, polished, and painted it, she will tell you with an air of relief that it is a "Made Being." Her statement is confirmed as a sort of article of faith, when you observe that as she places the vessel in the kiln, she also places in and beside it food. Evidently she vaguely gives something about the vessel a personal existence. The question arises how did these people come to regard food-receptacles or water-receptacles as possessed of or accompanied by conscious existences. I have found that the Zuñi argues actual and essential relationship from simi-

larity in the appearance, function, or other attributes of even generically diverse things.[2]

I here allude to this mental bias because it has both influenced the decoration of pottery and has been itself influenced by it. In the first place, the noise made by a pot when struck or when simmering on the fire is supposed to be the voice of its associated being. The clang of a pot when it breaks or suddenly cracks in burning is the cry of this being as it escapes or separates from the vessel. That it has departed is argued from the fact that the vase when cracked or fragmentary never resounds as it did when whole. This vague existence never cries out violently unprovoked; but it is supposed to acquire the power of doing so by imitation; hence, no one sings, whistles, or makes other strange or musical sounds resembling those of earthenware under the circumstances above described during the smoothing, polishing, painting, or other processes of finishing. The being thus incited, they think, would surely strive to come out, and would break the vessel in so doing. In this we find a partial explanation of the native belief that a pot is accompanied by a conscious existence. The rest of the solution of this problem in belief is involved in the native philosophy and worship of water. Water contains the source of continued life. The vessel holds the water; the source of life *accompanies* the water, hence its dwelling place is in the vessel with the water. Finally, the vessel is supposed to contain the treasured source, irrespective of the water—as do wells and springs, or even the places where they have been. If the encircling lines inside of the eating bowl, *outside* of the water jar, were closed, there would be no exit trail for this invisible source of life or for its influence or breath. Yet, why, it may be asked, must the source of life or its influence be provided with a trail by which to pass out from the vessel? In reply to this I will submit two considerations. It has been stated that on the earliest Southwestern potteries decoration was effected by incised or raised ornamentation. Any one who has often attempted to make vessels according to primitive methods as I have has found how difficult it is to smoothly join a line incised around a still soft clay pot, and that this difficulty is even greater when the ornamental band is laid on in relief. It would be a natural outgrowth of this predicament to leave the ends unjoined, which indeed the savage often did. When paint instead of incision or relief came to be the decorative agent, the lines or bands would be left unjoined in imitation. As those acquainted with Tylor's "Early History" will realize, a "myth of observation" like the above would come to be assigned in after ages.

[2] I would refer those who may wish to find this characteristic more fully set forth, to the introductory pages of my essay on Zuñi Fetiches, published in the second volume of Contributions to North American Ethnology by the Bureau of Ethnology; also to a paper read before the American Academy of Sciences on the Relations to one another of the Zuñi Mythologic and Sociologic Systems, published, I regret to say, without my revision, in the Popular Science Monthly, for July, 1882.

This may or may not be true of the case in question; for, as before observed, some classes of sacred receptacles, as well as the most ancient painted bowls, are not characterized by the unjoined lines. Whether true or not, it is an insufficient solution of the problem.

It is natural for the Pueblo to consider water as the prime source of life, or as accompanied by it, for without the presence of living water very few things grow in his desert land. During many a drought chronicled in his oral annals, plants, animals, and men have died as of a contagious scourge. Naturally, therefore, he has come to regard water as the milk of adults, to speak of it as such, and as the all-sufficient nourishment which the earth (in his conception of it as the mother of men) yields. In the times when his was a race of cliff and mesa dwellers, the most common vessel appertaining to his daily life was the flat-bellied canteen or water carrier. (See Fig. 547.) This was suspended by a band across the

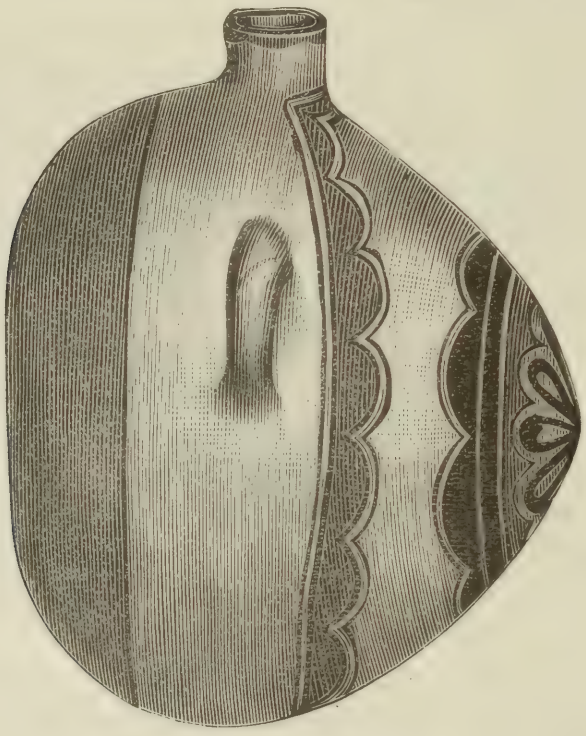


FIG. 547.—Conical or flat-bellied canteen.

forehead, so as to hang against the back, thus leaving the hands as well as the feet free for assistance in climbing. It now survives only for use on long journeys or at camps distant from water. The original suggestion of its form seems to have been that of the human mammary gland, or perhaps its peculiar form may have suggested a relationship between the two. (Compare Figs. 548, 549.) At any rate, its name in Zuñi is *me' he ton ne*, while *me' ha na* is the name of the human mammary gland. *Me' he ton ne* is from *me' ha na*, mamma, *c' ton nai e*, containing within, and *to'm me*. From *me' ha na* comes *wo' ha na*, hanging or placed against anything, obviously because the mammaries hang or are placed against the breast; or, possibly, *mé ha na* may be derived

from *wó ha na* by a reversal of reasoning, which view does not affect the argument in question. It is probable that the *me' he ton* was at first left open at the apex (Fig. 549, *a*) instead of at the top (Fig. 549, *b*); but, being found liable to leak when furnished with the aperture so low, this was closed. A surviving superstition inclines me to this view. When a Zuñi woman has completed the *me' he ton* nearly to the apex, by the coiling-process, and before she has inserted the nozzle (Fig. 549, *b*), she prepares a little wedge of clay, and, as she closes the apex with it, she turns her eyes away. If you ask her why she does this, she will tell you that it is *a'k ta ni* (fearful) to look at the vessel while closing it at this

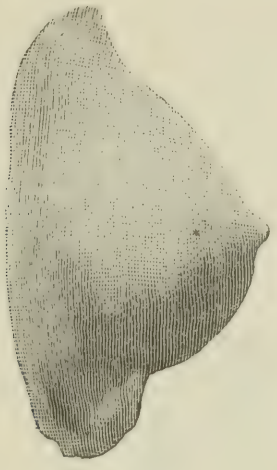


FIG. 548.

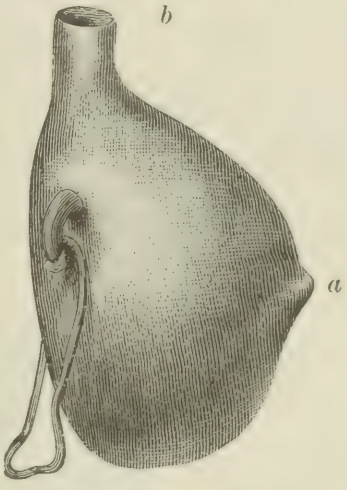


FIG. 549.

Conical canteen compared with human mammary gland.

point; that, if she look at it during this operation, she will be liable to become barren; or that, if children be born to her, they will die during infancy; or that she may be stricken with blindness; or those who drink from the vessel will be afflicted with disease and wasting away! My impression is that, reasoning from analogy (which with these people means actual relationship or connection, it will be remembered), the Zuñi woman supposes that by closing the apex of this *artificial* mamma she closes the exit-way for the "source of life;" further, that the woman who closes this exit-way knowingly (in her own sight, that is) voluntarily closes the exit-way for the source of life in her *own* mammæ; further still, that for this reason the privilege of bearing infants may be taken away from her, or at any rate (experience showing the fallacy of this philosophy) she deserves the loss of the sense (sight) which enabled her to "*knowingly*" close the exit-way of the source of life.

By that tenacity of conservative reasoning which is a marked mental characteristic of the sedentary Pueblo, other types of the canteen, of later origin, not only retained the name-root of this primeval form, but also its attributed functions. For example, the *me' wi k'i lik ton ne* (See Fig. 550) is named thus from *me we*, mammaries, *i ki lik toi e'*, joined together by a neck, and *to'm me*.

Now, when closing the ends (Fig. 550, *c*, *c*) of this curious vessel in molding it, the women are as careful to turn the eyes away as in closing the apex of the older form. As the resemblance of either of the ends of this vessel to the mamma is not striking, they place on either side of the nozzle a pair of little conical projections, resembling the teats, and so called. (Fig. 550, *b*.) There are four of these, instead of, as we might reasonably expect, two. The reason for this seems to be that the *me' wi k'i lik ton ne* is the canteen designed for use by the hunter in preference to all other vessels, because it may be easily wrapped in a blanket and tied to the back. Other forms would not do, as the hunter must have the free use not only of his hands but also of his head, that he may turn quickly this way or that in looking for or watching game. The proper nourishment of the hunter is the game he kills; hence, the source of his life, like that of the young of this game, is symbolized in the canteen by the mammaries, not of human beings, but of game-animals. A feature in these canteens dependent upon all this brings us nearer to an understanding of the question under discussion. When

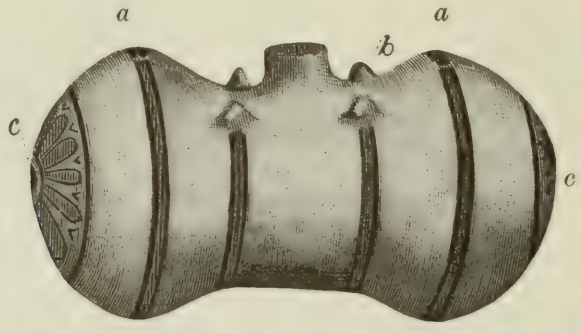


FIG. 550.—Double lobed or hunter canteen.

ornamental bands are painted around either end of the neck of one of them (Fig. 550, *b*), they are interrupted at the little projections (Fig. 550, *b*,). Indeed, I have observed specimens on which these lines, if placed farther out, were interrupted at the top (Fig. 550, *a a*) opposite the little projections. So, by analogy, it would seem the Pueblos came to regard paint, like clay, a barrier to the exit of the source of life. This idea of the source of life once associated with the canteen would readily become connected with the water-jar, which, if not the offspring of the canteen, at least usurped its place in the household economy of these people. From the water-jar it would pass naturally to drinking-vessels and eating-bowls, explaining the absence of the interrupted lines on the oldest of these and their constant occurrence on recent and modern examples; for the painted lines being left open at the apexes, or near the projections on the canteens, they should also be unjoined on other vessels with which the same ideas were associated.

So, also, it will be observed that in paintings of animals there is not only a line drawn from the mouth to the plainly depicted heart, but a

little space is left down the center or either side of this line (see Figs. 551, 552), which is called the *o ne yäthl kwa' to na*, or the "entrance trail" (of the source or breath of life).

FIG. 551.—Painting of deer.

FIG. 552.—Painting of sea-serpent.

By this long and involved examination of *one* element in the symbolism of Pueblo ceramic decoration, we gain some idea how many others not quite so striking, yet equally curious, grew up; how, also, they might be explained. Their investigation, however, would be attended with such intricate studies, involving so many subjects not at sight related to the one in hand, that I must hasten to present two other points.

Much wonder has been expressed that the Pueblos, so advanced in pottery decoration, have not attempted more representations of natural objects. There is less ground for this wonder than at first appears. It should be remembered that the original angular models which the Pueblo had, out of which to develop his art, bequeathed to him an extremely conventional conception of things. This, added to his peculiar way of interpreting relationship and personifying phenomena and even functions, has resulted in making his depictions obscure. In point of fact, in the decoration of certain classes of his pottery he has attempted the reproduction of almost everything and of every phenomenon in nature held as sacred or mysterious by him. On certain other classes he has developed, imitatively, many typical decorations which now have no special symbolism, but which once had definite significance; and, finally, he has sometimes relegated definite meanings to designs which at first had no significance, except as decorative agents, afterward using them according to this interpretation in his attempts to delineate natural objects, their phenomena, and functions. I will illustrate by examples, the last point first.

Going back to basketry, we find already the fully developed fret. (See Fig. 553.) I doubt not that from this was evolved, in accordance with Professor Hartt's theory, the scroll or volute as it appears later on pottery. (See Figs. 554, 555.) To both of these designs, and modifications of them ages later, the Pueblo has attached meanings. Those who have visited the Southwest and ridden over the wide, barren plains, during late autumn or early spring, have been astonished to find traced on the sand by no visible agency, perfect concentric circles and scrolls or volutes yards long and as regular as though drawn by a skilled artist.

The circles are made by the wind driving partly broken weed-stalks around and around their places of attachment, until the fibers by which they are anchored sever and the stalks are blown away. The volutes are formed by the stems of red-top grass and of a round-topped variety of the *chenopodium*, drifted onward by the whirlwind yet around and around their bushy adhesive tops. The Pueblos, observing these marks, especially that they are abundant after a wind storm, have wondered at their similarity to the painted scrolls on the pottery of their ancestors. Even to-day they believe the sand marks to be the tracks of the whirlwind, which is a God in their mythology of such distinctive personality

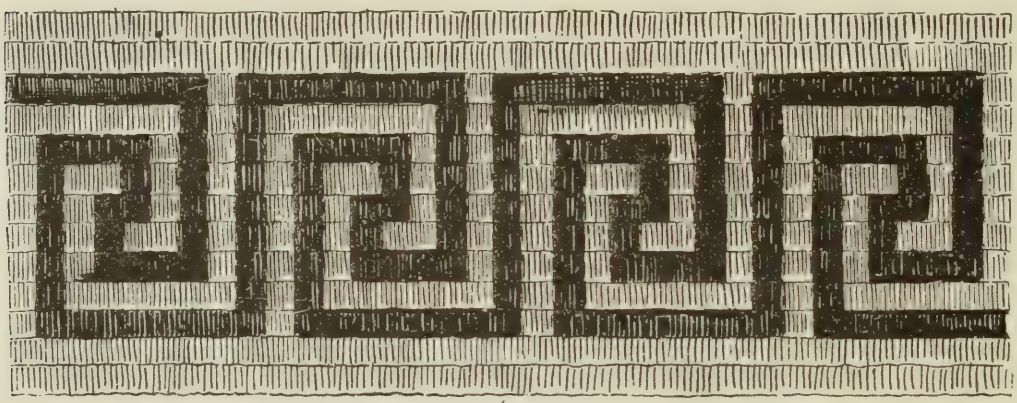


FIG. 553.—The fret of basket decoration.

FIG. 554.—The fret of pottery decoration.

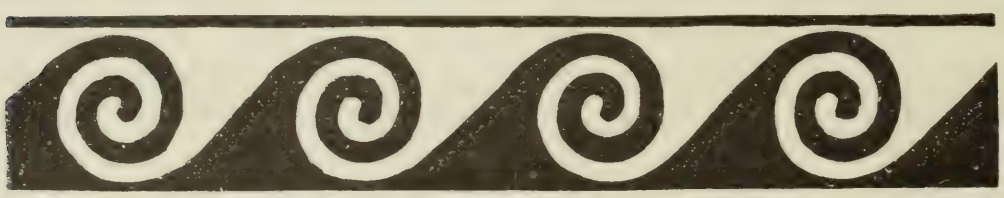


FIG. 555.—Scroll as evolved from fret in pottery decoration.

that the circling eagle is supposed to be related to him. They have naturally, therefore, explained the analogy above noted by the inference that their ancestors, in painting the volute, had intended to symbolize the whirlwind by representing his tracks. Thenceforward the scroll was drawn on certain classes of pottery to represent the whirlwind, modifications of it (for instance, by the color-sign belonging to any one of the "six regions") to signify other personified winds. So, also, the semicircle is classed as emblematic of the rainbow (*a' mi to lan ne*); the, obtuse angle, as of the sky (*a' po yan ne*); the zigzag line as lightning (*wi' lo lo an ne*); terraces as the sky horizons (*a'wi thlui a we*), and modi-

fications of the latter as the mythic "ancient sacred place of the spaces" (*Te' thlä shi na kwïn*), and so on.

By combining several of these elementary symbols in a single device, sometimes a mythic idea was beautifully expressed. Take, as an example, the rain totem adopted by the late Lewis H. Morgan as a title illumination, from Maj. J. W. Powell, who received it from the Moki Pueblos of Arizona as a token of his induction into the rain gens of

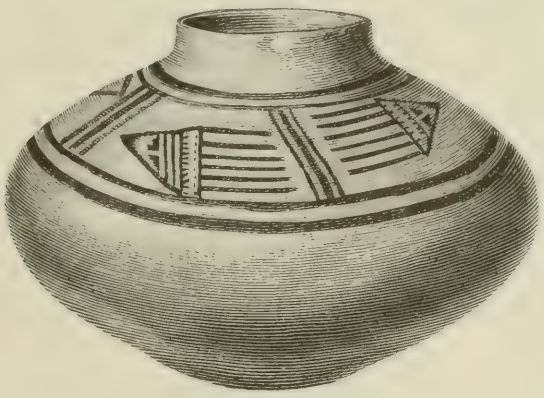
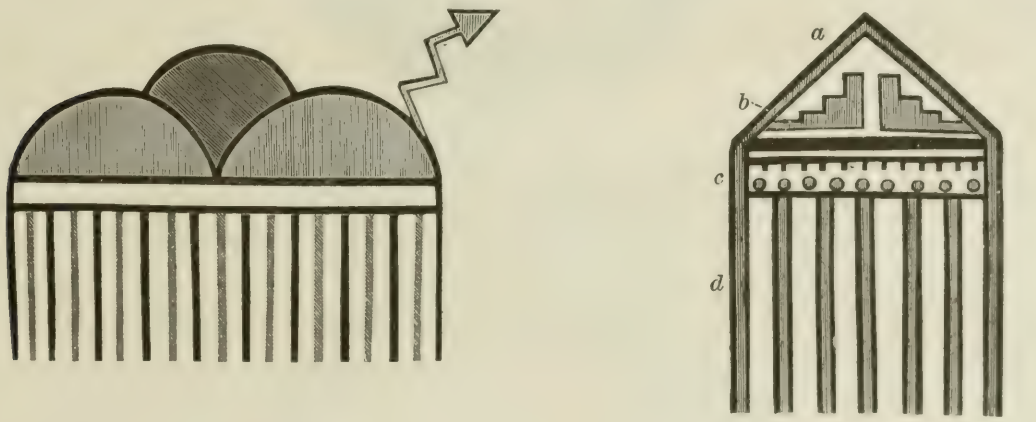


FIG. 556.—Ancient Pueblo "medicine-jar."

that people. (See Fig. 557, *a*.) An earlier and simpler form of this occurs on a very ancient "sacred medicine jar" which I found in the Southwest. (See Fig. 556.) By reference to an enlarged drawing of the chief decoration of this jar (see Fig. 557), it may be seen that the sky, *a*, the ancient place of the spaces (region of the sky gods), *b*, the cloud lines, *c*, and the falling rain, *d*, are combined and depicted to symbolize



a. Modern Moki rain symbol. *b*. Enlarged decoration of "medicine-jar."

FIG. 557.—Decoration of ancient medicine-jar compared with rain symbol of modern Moki totem.

the storm, which was the objective of the exhortations, rituals, and ceremonials to which the jar was an appurtenance.

Thus, upon all sacred vessels, from the drums of the esoteric medicine societies of the priesthood and all vases pertaining to them to the keramic appurtenances of the sacred dance or *Kâ' kâ*, all decorations were intentionally emblematic. Of this numerous class of vessels, I will choose but one for illustration—the prayer-meal-bowl of the *Kâ' kâ*.

In this, both form and ornamentation are significant. (See Fig. 558.) In explaining how the form of this vessel is held to be symbolic I will quote a passage from the "creation myth" as I rendered it in an article on the origin of corn, belonging to a series on "Zuñi Breadstuff," published this year in the "Millstone" of Indianapolis, Indiana. "Is not the bowl the emblem of the earth, our mother? For from her we draw both food and drink, as a babe draws nourishment from the breast of its mother; and round, as is the rim of a bowl, so is the horizon, terraced with mountains whence rise the clouds." This alludes to a medicine bowl, not to one of the handled kind, but I will apply it as far as it goes to the latter. The two terraces on either side of the handle (Fig. 558, *a a*) are in representation of the "ancient sacred place of the spaces," the handle being the line of the sky, and sometimes painted with the rainbow figure. Now the decorations are a trifle more complex. We may readily perceive that they represent tadpoles (Fig. 558, *b b*), dragon-flies (Fig. 558, *c c*), with also the frog or toad (Fig. 558); all this is of

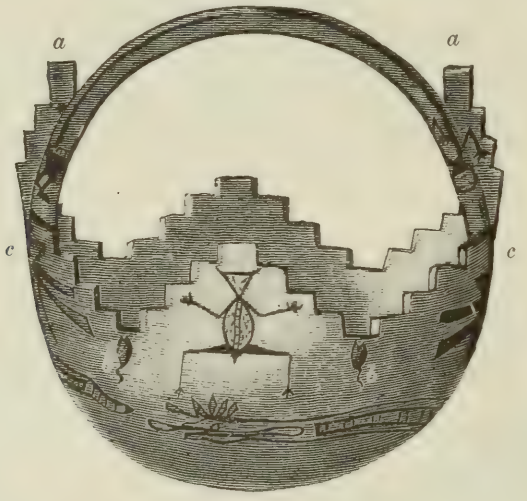


FIG. 558.—Zuñi prayer-meal-bowl.

easy interpretation. As the tadpole frequents the pools of spring time he has been adopted as the symbol of spring rains; the dragon-fly hovers over pools in summer, hence typifies the rains of summer; and the frog, maturing in them later, symbolizes the rains of the later seasons; for all these pools are due to rain fall. When, sometimes, the figure of the sacred butterfly (see Fig. 559, *a b*) replaces that of the dragon-fly, or alternates with it, it symbolizes the beneficence of summer; since, by a reverse order of reasoning, the Zuñis think that the butterflies and migratory birds (see Fig. 560) *bring* the warm season from the "Land of everlasting summer."

Upon vessels of special function, like these we have just noticed, peculiar figures may be regarded as emblematic; on other classes, no matter how evidently conventional and expressive decorations may seem, excepting always, totemic designs, it is wise to use great caution in their interpretation as intentional and not merely imitative.

A general examination, even of the most modern of Pueblo pottery,

shows us that certain types of decoration have once been confined to certain types of vessels, all which has its due signification but an examination of which would properly form the subject of another essay.

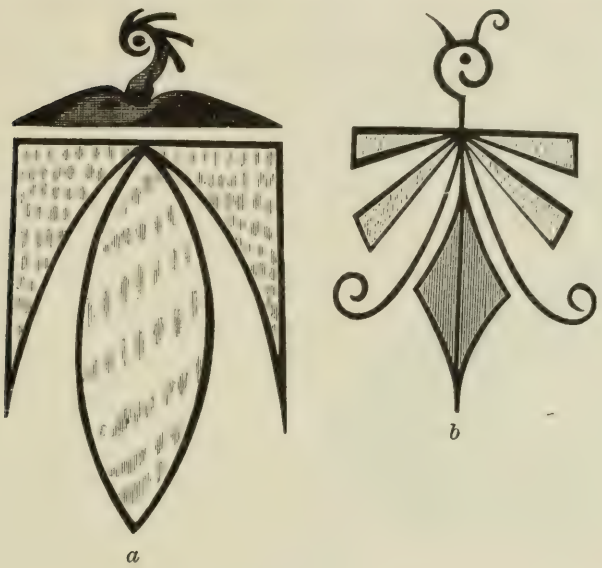


FIG. 559.—Paintings of sacred butterfly.

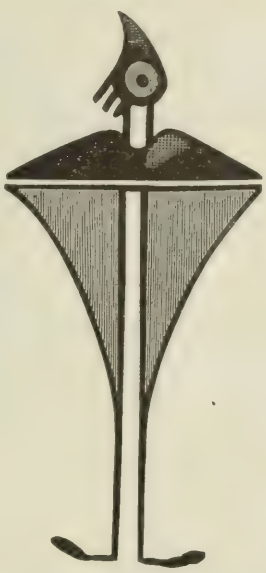


FIG. 560.—Painting of "summer-bird."

Happily, a work collateral to the one which I have here merely begun, will, I have reason to hope, be carried to a high degree of perfection in the forthcoming monographs on the exhaustless ceramic collections of the United States National Museum by Mr. William H. Holmes. This author and artist will approach his task from a standpoint differing from mine, reaching thereby, it may be, conclusions at variance with the foregoing; but by means of his wealth of material and illustration students will have opportunity of passing a judgment upon the merits of not only his work, but of my own.

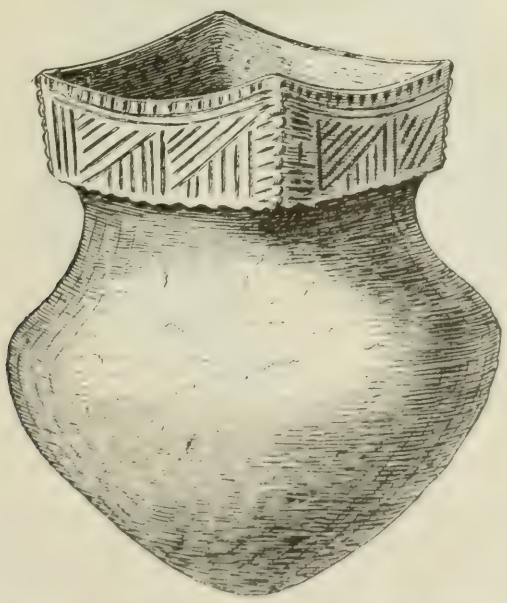


FIG. 561.—Rectangular type of earthen vessel.

In conclusion, let me very briefly refer to two distinctive American types of pottery, unconnected with the Southwestern, which, considered

in conjunction with those of the latter region, seem to me to indicate that the ceramic art has had independent centers of origin in America. For the sake of convenience, I may name these types the rectangular (see Fig. 561) or Iroquois, and the bisymmetrical or kidney-shaped (see Fig. 562), of Nicaragua. The one is almost constant in the lake regions of the United States, the other equally constant in sections of Central America. In collections gathered from any tribe of our Algonquin or Iroquois

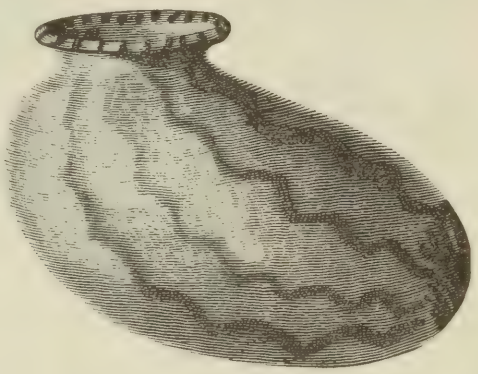


FIG. 562.—Kidney-shaped vessel, Nicaragua.

Indians, one may observe vessels of the tough birch- or linden-bark, some of which are spherical or hemispherical. To produce this form of utensil from a single piece of bark, it is necessary to cut pieces out of the margin and fold it. Each fold, when stitched together in the shaping of the vessel, forms a corner at the upper part. (See Fig. 563.) These corners and the borders which they form are decorated with short lines

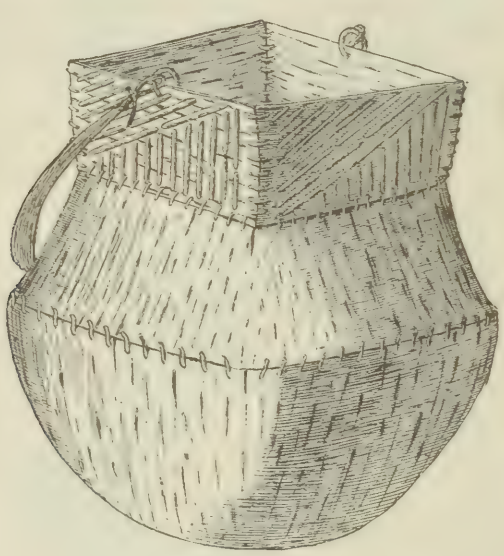


FIG. 563.—Iroquois bark-vessel.

and combinations of lines, composed of coarse embroideries with dyed porcupine quills. (See Fig. 564.) May not the bark vessel have given rise to the rectangular type of pottery and its quill ornamentation to the incised straight-line decorations? (Compare Fig. 561.)

So, too, in the unsymmetrical urns of Central and Isthmean America, which are characterized by the location of the aperture at the upper part

of one of the extremities and by streak-like decorations, we have a decided suggestion of the animal paunch or bladder and of the visible veins on its surface when distended.

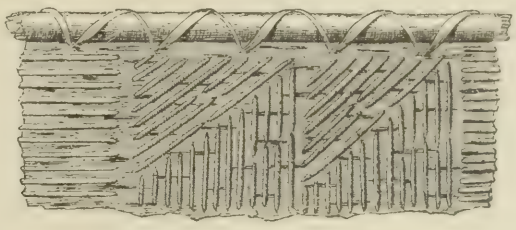


FIG. 564.—Porcupine-quill decoration.

If these conjectures be accepted as approximately correct, even in tendency, we may hope by a patient study of the ceramic remains of a people, no matter where situated, to discover what was the type of their pre-ceramic vessels, and thereby we might also learn whether, at the time of the origin of the potter's art or during its development, they had, like the Pueblos, been indigenous to the areas in which they were found, or whether they had, like some of the Central Americans, (to make a concrete example and judge it by this method) apparently immigrated in part from desert North America, in part from the wilderness of an equatorial region in South America.

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